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**APPENDIX A - LIST OF COMPULSORY DISCIPLINE EXAMINATIONS**

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***Agricultural / Biosystems / Bioresource / Food Engineering Syllabus***

04-Agric-A1	Applied Plant, Animal or Human Physiology
04-Agric-A2	Soil Physics and Mechanics
04-Agric-A3	Heat Engineering
04-Agric-A4	Fluid Flow
04-Agric-A5	Principles of Instrumentation
04-Agric-A6	Physical Properties of Biological Materials and Food Products
04-Agric-A7	Chemistry and Microbiology of Foods

***Biomedical / Biochemical Engineering***

04-Bio-A1	Biomaterials and Biocompatibility
04-Bio-A2	Process Dynamics and Control
04-Bio-A3	Cellular and Molecular Biology and Biochemistry
04-Bio-A4	Biomechanics
04-Bio-A5	Enzyme and Microbial Kinetics
04-Bio-A6	Anatomy and Physiology
04-Bio-A7	Fluid Mechanics
04-Bio-A8	Biophysical Measurements
04-Bio-A9	Bioreactor Design

***Building Engineering***

07-Bid-A1	Elementary Structural Analysis
07-Bid-A2	Elementary Structural Design
07-Bid-A3	Construction Engineering
07-Bid-A4	Building Engineering Systems
07-Bid-A5	Building Science
07-Bid-A6	Geotechnical Materials and Analysis
07-Bid-A7	Building Envelope Design

***Chemical Engineering***

04-Chem-A1	Process Balances and Chemical Thermodynamics
04-Chem-A2	Mechanical and Thermal Operations
04-Chem-A3	Mass Transfer Operations
04-Chem-A4	Chemical Reactor Engineering
04-Chem-A5	Chemical Plant Design and Economics
04-Chem-A6	Process Dynamics and Control

***Civil Engineering***

98-Civ-A1	Elementary Structural Analysis
98-Civ-A2	Elementary Structural Design
98-Civ-A3	Environmental Engineering
98-Civ-A4	Geotechnical Materials and Analysis
98-Civ-A5	Hydraulic Engineering
98-Civ-A6	Transportation Planning and Engineering

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***Computer Engineering***

98-Comp-A1	Electronics
98-Comp-A2	Digital Systems Design
98-Comp-A3	Computer Architecture
98-Comp-A4	Program Design and Data Structures
98-Comp-A5	Operating Systems
98-Comp-A6	Software Engineering

***Electrical Engineering***

07-Elec-A1	Circuits
07-Elec-A2	Systems and Control
07-Elec-A3	Signals and Communications
07-Elec-A4	Digital Systems and Computers
07-Elec-A5	Electronics
07-Elec-A6	Power Systems and Machines
07-Elec-A7	Electromagnetics

***Engineering Physics***

98-Phys-A1	Classical Mechanics
98-Phys-A2	Statistical Physics
98-Phys-A3	Electromagnetics
98-Phys-A4	Quantum Mechanics
98-Phys-A5	Semiconductor Devices and Circuits
98-Phys-A6	Solid State Physics
98-Phys-A7	Optics

***Environmental Engineering***

04-Env-A1	Principles of Environmental Engineering
04-Env-A2	Hydrology and Municipal Hydraulics Engineering
04-Env-A3	Geotechnical and Hydrogeological Engineering
04-Env-A4	Water and Wastewater Engineering
04-Env-A5	Air Quality and Pollution Control Engineering
04-Env-A6	Solid Waste Engineering and Management

***Forest Engineering***

04-For-A1	Forest Engineering Operations
04-For-A2	Wood Technology
04-For-A3	Transportation Of Forest Products
04-For-A4	Forest Management
04-For-A5	Forest Hydrology
04-For-A6	Silviculture

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***Geological Engineering***

04-Geol-A1	Mineralogy and Petrology
04-Geol-A2	Hydrogeology
04-Geol-A3	Sedimentation and Stratigraphy
04-Geol-A4	Structural Geology
04-Geol-A5	Rock Mechanics
04-Geol-A6	Soil Mechanics
04-Geol-A7	Applied Geophysics

***Geomatics Engineering***

04-Geom-A1	Surveying
04-Geom-A2	Adjustment of Observations and Data Analysis
04-Geom-A3	Geodesy and Positioning
04-Geom-A4	Photogrammetry
04-Geom-A5	Remote Sensing and Image Analysis
04-Geom-A6	Cadastral Studies
04-Geom-A7	Geospatial Information Systems

***Industrial Engineering***

98-Ind-A1	Operations Research
98-Ind-A2	Analysis and Design of Work
98-Ind-A3	Facilities Planning
98-Ind-A4	Production Management
98-Ind-A5	Quality Planning, Control and Assurance
98-Ind-A6	Systems Simulation

***Marine Engineering***

98-Mar-A1	Applied Thermodynamics and Heat Transfer
98-Mar-A2	Fundamentals of Naval Architecture
98-Mar-A3	Fluid Mechanics and Applications
98-Mar-A4	Kinematics and Dynamics of Machines
98-Mar-A5	Advanced Strength of Materials
98-Mar-A6	Design and Manufacture of Machine Elements
98-Mar-A7	Marine Engineering

***Mechanical Engineering***

07-Mec-A1	Applied Thermodynamics and Heat Transfer
07-Mec-A2	Kinematics and Dynamics of Machines
07-Mec-A3	System Analysis and Control
07-Mec-A4	Design and Manufacture of Machine Elements
07-Mec-A5	Electrical and Electronics Engineering
07-Mec-A6	Fluid Machinery
07-Mec-A7	Advanced Strength of Materials

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***Metallurgical Engineering***

10-Met-A1	Metallurgical Thermodynamics
10-Met-A2	Metallurgical Rate Phenomena
10-Met-A3	Metal Extraction Processes
10-Met-A4	Structure of Materials
10-Met-A5	Mechanical Behaviour and Fracture of Materials
10-Met-A6	Phase Transformation and Thermal Treatment of Metals and Alloys
10-Met-A7	Corrosion and Oxidation

***Mining and Mineral Processing Engineering***

09-Mmp-A1	General Geology and Exploration
09-Mmp-A2	Mining Methods and Design
09-Mmp-A3	Mineral Processing
09-Mmp-A4	Mine Valuation and Mineral Resource Estimation
09-Mmp-A5	Surface Mining Methods and Design
09-Mmp-A6	Mining and the Environment

***Naval Architectural Engineering***

98-Nav-A1	Fundamentals of Naval Architecture
98-Nav-A2	Hydrodynamics of Ships (I): Resistance and Propulsion
98-Nav-A3	Hydrodynamics of Ships (II): Ship Motion
98-Nav-A4	Ship Structure and Strength of Ships
98-Nav-A5	Ship Design
98-Nav-A6	Advanced Strength of Materials

***Petroleum Engineering***

98-Pet-A1	Principles of Stratigraphy and Sedimentation
98-Pet-A2	Petroleum Reservoir Fluids
98-Pet-A3	Fundamental Reservoir Engineering
98-Pet-A4	Oil and Gas Well Drilling and Completion
98-Pet-A5	Petroleum Production Operations
98-Pet-A6	Reservoir Mechanics
98-Pet-A7	Secondary and Enhanced Recovery

***Software Engineering***

04-Soft-A1	Algorithms & Data Structures
04-Soft-A2	Computing Structures
04-Soft-A3	Software Design
04-Soft-A4	Real Time Systems
04-Soft-A5	Requirements and Specifications
04-Soft-A6	Software Quality Assurance
04-Soft-A7	Software Process

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***Structural Engineering***

07-Str-A1	Elementary Structural Analysis
07-Str-A2	Elementary Structural Design
07-Str-A3	Geotechnical Materials and Analysis
07-Str-A4	Advanced Structural Analysis
07-Str-A5	Advanced Structural Design
07-Str-A6-1	Applications of Finite Elements
07-Str-A6-2	Advanced Structural Mechanics
07-Str-A6-3	Earthquake Engineering