ESTACA GRADUATE PROGRAMME
IN *AUTOMOTIVE* ENGINEERING

COMMON CORE		Year 1&2	Year 3	Year 4	Year 5
Basic Science / Engineering					
	Engineering Analysis : Algebra & Maths	500 h	50 h	-	-
	Solid Mechanics	100 h	50 h	-	-
	Fluid Mechanics	100 h	20 h	-	-
	Thermodynamics	70 h	-	-	-
	Engineering Materials	120 h	40 h	-	-
	Thermal Motors	80 h	-	-	-
	Heat Transfer	30 h	30 h	-	-
	Signal Processing	-	30 h	-	-
	Industrial Design	100 h	-	-	-
	CAD / CATIA	-	20 h	-	-
	Electrical Engineering	100 h	50 h	-	-
Manufacturing Science					
	Value Analysis	-	20 h	-	-
	Manufacturing Methods	-	20 h	30 h	10 h
	Production Management	-	-	30 h	-
	Quality Assurance	-	-	20 h	-
	Project Management	-	-	20 h	20 h
Automotive Engineering					
Vehicle Dynamics	Roadholding	-	20	-	-
	Braking Systems	-	-	20 h	-
	Suspension Systems		-	20 h	-
	Vehicle Dynamics		-	20 h	-
Aerodynamics	Vehicle Structures/Bodywork	-	20 h	-	-
	Passenger Cell/Ergonomics				
Driving Systems	Gear Mechanisms	-	-	25 h	-
	Transmissions			25 h	
Engines	Diesel Engine	-	50 h	-	-
	Fuel Engine	-	-	20 h	-
	Engine Tuning	-	-	30 h	-
Engine Control	Sound Sources/Struct. Vibrations	-	-	-	20 h
	Electronic Systems	-	-	20 h	20 h
Manufacturing Processes	Quality / Reliability	-	-	-	30 h
	Prod. Management/Logistics	-	-	-	10 h

* YEAR 4 & YEAR 5 *

SPECIALIZATION 200h
CANDIDATES SELECT ONE OPTIONAL MODULE (200 h) AMONG :

THERMO-FLUID ENGINEERING	NOISE & VIBRATION	STRUCTURES & MATERIALS	SERVO-CONTROL
Numerical Methods	Signal Processing	Structure Analysis with the Finite Element Method	Signal Sensing and Processing
Turbulence	Modal Analysis		
Industrial Heat Transfer Applications	Vibrations	Composite Materials	Digital Control
	Sensor	Theory of Plates & Shells	Multivariable, Non Linear & Hydraulic Systems
Measurement Process	Noise	Mechanics of Fracture in Solids	Process Identification
Two-Phase Flow	Laboratory work : Star, Simulink, Nastran		Robotics
Laboratory work : Fluent, Catia, Nastran ...		Residual Stress	
		Non-Destructive Control	Control Theory
		Damaging and Fatigue	Laboratory work : Matlab, Simulink, dSPace, PSpice
		Plasticity	
		Lab. work:Samcef, Catia	

INDUSTRIAL PLACEMENT

Year 1 & 2 : Summer Placement (8 weeks)

Year 4 : Summer Placement (12 weeks)

Year 5 : Final Year Placement : January-June (6 months)

HUMAN RESOURCES & MANAGEMENT (150h)
Accounting/Company Strategy & Management/Marketing/
Communication/Business English as a Foreign Language

ESTACA GRADUATE PROGRAMME IN *AERONAUTICAL* ENGINEERING

COMMON CORE	Year 1&2	Year 3	Year 4	Year 5
Basic Science / Engineering				
Engineering Analysis : Algebra & Maths	500 h	50 h	-	-
Solid Mechanics	100 h	50 h	-	-
Fluid Mechanics	100 h	20 h	-	-
Thermodynamics	70 h	-	-	-
Engineering Materials	120 h	40 h	-	-
Thermal Motors	80 h	-	-	-
Heat Transfer	30 h	30 h	-	-
Signal Processing	-	30 h	-	-
Industrial Design	100 h	-	-	-
CAD / CATIA	-	20 h	-	-
Electrical Engineering	100 h	50 h	-	-
Manufacturing Science				
Value Analysis	-	20 h	-	-
Manufacturing Methods	-	20 h	30 h	10 h
Production Management	-	-	30 h	-
Quality Assurance	-	-	20 h	-
Project Management	-	-	20 h	20 h

Aeronautical Engineering		Year 1&2	Year 3	Year 4	Year 5
Aircraft Design	Mechanics of Flight	-	50 h	-	-
	Structural Design	-	-	25 h	25 h
Helicopter	Design & Measurement	-	-	20 h	-
Propulsion	Aircraft Propulsion	-	-	30 h	-
	Turbo-Jet and Turboprop	-	-	-	20 h
Aerodynamics	Incompressible Flow	-	40 h	-	-
	Compressible Flow	-	-	50 h	-
	Hypersonic Flow	-	-	-	30 h
Guidance and Control	Radar Systems	-	-	20 h	20 h
	Avionics	-	-	-	20 h
	Automatic Control	-	-	10 h	-
Introduction to Industry	Maintenance	-	-	-	20 h
	Manufacturing Systems	-	-	30 h	-
	Maintenance Procedures	-	-	-	10 h

* YEAR 4 & YEAR 5 *

SPECIALIZATION — 200h
CANDIDATES SELECT ONE OPTIONAL MODULE (200 h) AMONG :

THERMO-FLUID ENGINEERING	NOISE & VIBRATION	STRUCTURES & MATERIALS	SERVO-CONTROL
Numerical Methods	Signal Processing	Structure Analysis with the Finite Element Method	Signal Sensing and Processing
Turbulence	Modal Analysis		
Industrial Heat Transfer Applications	Vibrations	Composite Materials	Digital Control
	Sensor	Theory of Plates & Shells	Multivariable, Non Linear & Hydraulic Systems
Measurement Process	Noise	Mechanics of Fracture in Solids	Process Identification
Two-Phase Flow	Laboratory work : Star, Simulink, Nastran	Residual Stress	Robotics
Laboratory work : Fluent, Catia, Nastran ...		Non-Destructive Control	Control Theory
		Damaging and Fatigue	Laboratory work : Matlab, Simulink, dSPace, PSpice
		Plasticity	
		Lab. work:Samcef, Catia	

INDUSTRIAL PLACEMENT

Year 1 & 2 : Summer Placement (8 weeks)

Year 4 : Summer Placement (12 weeks)

Year 5 : Final Year Placement : January-June (6 months)

HUMAN RESOURCES & MANAGEMENT (150h)
Accounting/Company Strategy & Management/Marketing/
Communication/Business English as a Foreign Language

ESTACA GRADUATE PROGRAMME IN *SPACE* ENGINEERING

COMMON CORE	YEAR 1&2	YEAR 3	YEAR 4	YEAR 5
Basic Science / Engineering				
Engineering Analysis : Algebra & Maths	500 h	50 h	-	-
Solid Mechanics	100 h	50 h	-	-
Fluid Mechanics	100 h	20 h	-	-
Thermodynamics	70 h	-	-	-
Engineering Materials	120 h	40 h	-	-
Thermal Motors	80 h	-	-	-
Heat Transfer	30 h	30 h	-	-
Signal Processing	-	30 h	-	-
Industrial Design	100 h	-	-	-
CAD / CATIA	-	20 h	-	-
Electrical Engineering	100 h	50 h	-	-
Manufacturing Science				
Value Analysis	-	20 h	-	-
Manufacturing Methods	-	20 h	30 h	10 h
Production Management	-	-	30 h	-
Quality Assurance	-	-	20 h	-
Project Management	-	-	20 h	20 h
Space Engineering				
Space Engineering				
Aircraft Engineering Technology	-	-	50 h	-
Automatic Control	-	-	20 h	-
Aerodynamics				
Incompressible Flow	-	30 h	-	-
Compressible Flow	-	-	40 h	-
Hypersonic Aerodynamics	-	-	-	30 h
Propulsion				
Rocket Propulsion	-	-	50 h	-
Air-Breathing Propulsion	-	-	-	20 h
Space Flight				
Mechanics of Flight	-	50 h	-	-
Space Mechanics	-	-	60 h	-
Spacecraft Reentry Phenomena	-	-	-	30 h
Spacecraft				
Launcher Design	-	-	30 h	-
Satellite Design	-	-	-	30 h

* YEAR 4 & YEAR 5 *
HUMAN RESOURCES & MANAGEMENT (150h)
Accounting / Company Strategy & Management / Marketing
Communication / Business English as a Foreign Language

OPTIONAL MODULE
CANDIDATES SELECT ONE OPTIONAL MODULE (200 h) AMONG :

THERMO-FLUID ENGINEERING	NOISE & VIBRATION	STRUCTURES & MATERIALS	SERVO-CONTROL
Numerical Methods	Signal Processing	Structure Analysis with the Finite Element Method	Signal Sensing and Processing
Turbulence	Modal Analysis		
Industrial Heat Transfer Applications	Vibrations	Composite Materials	Digital Control
	Sensor	Theory of Plates & Shells	Multivariable, Non Linear & Hydraulic Systems
Measurement Process	Noise	Mechanics of Fracture in Solids	Process Identification
Two-Phase Flow	Laboratory work : Star, Simulink, Nastran	Residual Stress	Robotics
Laboratory work : Fluent, Catia, Nastran ...		Non-Destructive Control	Control Theory
		Damaging and Fatigue	Laboratory work : Matlab, Simulink, dSPace, PSpice
		Plasticity	
		Laboratory work : Samcef, Catia	

INDUSTRIAL PLACEMENT
Year 1 & 2 : Summer Placement (8 weeks)
Year 4 : Summer Placement (12 weeks)
Year 5 : Final Year Placement : January-June (6 months)

ESTACA GRADUATE PROGRAMME IN *RAILWAY* ENGINEERING

COMMON CORE	YEAR 1&2	YEAR 3	YEAR 4	YEAR 5
Basic Science / Engineering				
Engineering Analysis : Algebra & Maths	500 h	50 h	-	-
Solid Mechanics	100 h	50 h	-	-
Fluid Mechanics	100 h	20 h	-	-
Thermodynamics	70 h	-	-	-
Engineering Materials	120 h	40 h	-	-
Thermal Motors	80 h	-	-	-
Heat Transfert	30 h	30 h	-	-
Signal Processing	-	30 h	-	-
Industrial Design	100 h	-	-	-
CAD / CATIA	-	20 h	-	-
Electrical Engineering	100 h	50 h	-	-
Manufacturing Science				
Value Analysis	-	20 h	-	-
Manufacturing Methods	-	20 h	30 h	10 h
Production Management	-	-	30 h	-
Quality Assurance	-	-	20 h	-
Project Management	-	-	20 h	20 h
Railway Engineering (300h)				
Roadholding (Automotive)	-	20 h	-	-
Braking Systems	-	-	20 h	-
Wheel Rail Interaction	-	-	-	15 h
Track and Equipment	-	-	25 h	-
Diesel Engines (Automotive)	-	50 h	-	-
Powered Vehicles	-	-	15 h	-
Electric Power	-	-	50 h	-
Railway Dynamics	-	-	-	25 h
Vehicle Structure / Bodywork Ergonomics (Automotive)	—	20 h	—	—
Rolling Stock Maintenance, Reliability	-	-	-	20 h

	YEAR 1&2	YEAR 3	YEAR 4	YEAR 5
Engineering Project	-	-	X	X
Design Project	-	-	X	X

* YEAR 4 & YEAR 5 *

HUMAN RESOURCES & MANAGEMENT (150h)
Accounting / Company Strategy & Management / Marketing
Communication / Business English as a Foreign Language

OPTIONAL MODULE
CANDIDATES SELECT ONE OPTIONAL MODULE (200 h) AMONG :

THERMO-FLUID ENGINEERING	NOISE & VIBRATION	STRUCTURES & MATERIALS	SERVO-CONTROL
Numerical Methods	Signal Processing	Structure Analysis with the Finite Element Method	Signal Sensing and Processing
Turbulence	Modal Analysis		
Industrial Heat Transfer Applications	Vibrations	Composite Materials	Digital Control
	Sensor	Theory of Plates & Shells	Multivariable, Non Linear & Hydraulic Systems
Measurement Process	Noise	Mechanics of Fracture in Solids	
Two-Phase Flow	Laboratory work : Star, Simulink, Nastran		Process Identification
Laboratory work : Fluent, Catia, Nastran ...		Residual Stress	Robotics
		Non-Destructive Control	Control Theory
		Damaging and Fatigue	Laboratory work : Matlab, Simulink, dSPace, PSpice
		Plasticity	
		Laboratory work : Samcef, Catia	

INDUSTRIAL PLACEMENT
Year 1 & 2 : Summer Placement (8 weeks)
Year 4 : Summer Placement (12 weeks)
Year 5 : Final Year Placement : January-June (6 months)