List of qualification subjects acceptable for entry into Northern Powergroup technical Band B job roles - March 2021

	Code	Subject	Description	Direct to Operational roles (AP/SAP)	Entry to Tech Training programme	Non Operational Roles	EATL technical training programme req for operational role
Physical Sciences	F300	Physics	The study of the properties of matter and energy and the relationships between them, making extensive use of mathematical techniques and models. May include mechanics, optics, electricity, magnetism and acoustics. May also include atomic, nuclear, particle and solid state studies.	No	Yes	Yes	Yes
	F311	Engineering physics	Physical principles and techniques applied to engineering and technology.	No	Yes	Yes	Yes
	F320	Chemical physics	Concerned with central area of physical science, integrating chemistry and physics.	No	Yes	Yes	Yes
	F340	Mathematical & theoretical physics	The mathematical principles and techniques of physics theory and explanation of physical phenomena.	No	Yes	Yes	Yes
	F341	Electromagnetism	The study of the interaction of charges in electromagnetic fields.	No	Yes	Yes	Yes
	F343	Computational physics	Numerical and quantitative methods in physics.	No	Yes	Yes	Yes
Maths	G100	Mathematics	The rigorous analysis of quantities, magnitudes, forms and their relationships, using symbolic logic and language, both in its own right and as applied to other disciplines.	No	Yes	Yes	Yes
	G110	Pure mathematics	The rigorous analysis of quantities, magnitudes, forms and their relationships, using symbolic logic and language.	No	Yes	Yes	Yes
	G120	Applied mathematics	The application of mathematical principles to the solution of functional area problems.	No	Yes	Yes	Yes
	G121	Mechanics (mathematical)	Branch of applied mathematics concerned with motion and the tendency to motion.	No	Yes	Yes	Yes
	G130	Mathematical methods	The study of specific techniques for the precise solution of mathematical problems.	No	Yes	Yes	Yes
	G140	Numerical analysis	The study of the mathematical methods used to obtain approximate (numerical) results to a problem on a digital computer.	No	Yes	Yes	Yes
	G150	Mathematical modelling	The use of mathematical principles to construct simplified representations and simulations of 'real-world' processes, allowing calculations and predictions to be made.	No	Yes	Yes	Yes
	G160	Engineering/industrial mathematics	Branch of mathematics concerned with the application of mathematical principles in the areas of engineering and industrial systems/processes.	No	Yes	Yes	Yes
	G170	Computational mathematics	The study of advanced mathematical topics used in computational processes across a range of applications.	No	Yes	Yes	Yes
	G200	Operational research	The development and application of complex mathematical or simulation models to solve problems involving operational systems, where the system concerned is subject to human intervention.	No	Yes	Yes	Yes
Engineering	H100	General engineering	The study of design, construction, maintenance and development of any device which uses the resources of nature to turn energy into productive and useful work.	No	Yes	Yes	Yes
	H110	Integrated engineering	The study of different branches of engineering and how they may interrelate.	No	Yes	Yes	Yes
	H200	Civil engineering	The study of the principles of engineering as they apply to the designing and construction of public works, e.g. buildings, bridges, pipelines etc. Involves the study and application of specialist mathematics.	No	Yes	Yes	Yes
	H210	Structural engineering	The study of the principles of engineering as they apply to the design and construction of physical shapes and forms. Involves the study and application of specialist mathematics.	No	Yes	Yes	Yes
	H221	Energy resources	The study and principles of engineering as they apply to the development and exploitation of various forms of energy, e.g. wind, water, solar etc. Involves the study and application of specialist mathematics.	No	Yes	Yes	Yes
	H300	Mechanical engineering	The study of the principles of engineering as they apply to the design, development manufacture and operation of machinery.	No	Yes	Yes	Yes
	H311	Thermodynamics	The study of the interrelationship and interconversion of different forms of energy. Includes the study of the effects of pressure, temperature etc. May also be called Heat Exchange Technology. Involves the study and application of specialist mathematics.	No	Yes	Yes	Yes
	H321	Turbine technology	The study of the conversion of the kinetic energy of a moving fluid via a rotating blade into mechanical energy. Involves the study and application of specialist mathematics. Involves the study and application of specialist mathematics.	No	Yes	Yes	Yes
	H360	Electromechanical engineering	The study of electrically-operated mechanical devices.	Yes	Yes	Yes	Yes
	H600	Electronic & electrical engineering	The study of the principles of engineering as they apply to the practical uses of electricity. Involves the study of charged particles.	Yes	Yes	Yes	Yes
	H610	Electronic engineering	The study of the principles of engineering as they apply to devices whereby electrons are conducted through a semi-conductor, free space or gas. Closely linked with electrical engineering.	Yes	Yes	Yes	Yes
	H611	Microelectronic engineering	The study of the principles of engineering as they apply to microcircuits.	No	Yes	Yes	Yes
	H612	Integrated circuit design	The study of the most efficient processing of semiconductor material to form integrated circuits.	No	Yes	Yes	Yes
	H620	Electrical engineering	The study of the principles of engineering as they apply to the practical uses of electrical systems. Involves the study of charged particles. Closely linked with electronic engineering.	Yes	Yes	Yes	Yes
	H630	Electrical power	The study of the rates at which electrical energy is fed into or taken from a device or system. Involves the study and application of specialist mathematics.	Yes	Yes	Yes	Yes
	H631	Electrical power generation	The study and development of techniques for producing electricity.	Yes	Yes	Yes	Yes
	H632	Electrical power distribution	The study and development of electromotive forces and techniques for distributing electricity.	Yes	Yes	Yes	Yes
	H640	Communications engineering	The study and principles of engineering as they apply to electronic engineering.	No	Yes	Yes	Yes
	H641	Telecommunications engineering	The study of the principles of engineering as they apply to the telephonic or telegraphic communication of audio, video or other information (e.g. data) by means of radio waves, optical or electrical signals.	No	Yes	Yes	Yes
	H650	Systems engineering	The study of the principles of engineering as they apply to an assembly of electrical, electronic and mechanical components with interdependent functions.	Yes	Yes	Yes	Yes
	H651	Digital circuit engineering	The study of the principles of engineering as they apply to discrete values of input and output voltage levels.	No	Yes	Yes	Yes
	H652	Analogue circuit engineering	The study of the principles of engineering as they apply to voltages or currents used to measure or represent quantities.	No	Yes	Yes	Yes
	H660	Control systems	The study of the principles of engineering as they apply to electrical and electronic methods of measurement, regulation and operation.	No	Yes	Yes	Yes
	H690	Electronic & electrical engineering not elsewhere classified	Miscellaneous grouping for related subjects which do not fit into other Electronic and Electrical Engineering categories. To be used sparingly.	No	Yes	Yes	Yes
Computer Sciences	I100	Computer science	The study of the design and application of electronic computer systems, including computer architectures, software and systems design.	No	Yes	Yes	No
	I110	Computer architectures & operating systems	The study of the systemic structure of computer systems and the associated software which facilitates the efficient co-ordination and use of the component units.	No	Yes	Yes	No
	I111	Computer architectures	The study of the systemic structure of computer systems.	No	Yes	Yes	No
	I112	Operating systems	The study of software which is designed to facilitate the efficient co-ordination and use of system components.	No	Yes	Yes	No
	I120	Networks & communications	The study of computer network systems and computer communications techniques/protocols.	No	Yes	Yes	Yes
	I200	Information systems	The study, design or application of computer systems which capture, process and transmit information.	No	Yes	Yes	Yes
	I240	Databases	The study, design or application of information systems which act as structured repositories for large amounts of information.	No	Yes	Yes	No
	I250	Systems auditing	The study and development of techniques for inspecting, correcting and verifying information systems.	No	Yes	Yes	No
	I260	Data management	The management of computer systems which capture, process and transmit data.	No	Yes	Yes	No
	I300	Software engineering	The study of techniques and principles for the design, construction, testing and maintenance of computer programs to satisfy the requirements of specific operational problems.	No	Yes	Yes	No
	I310	Software design	Concerned with the design of computer instruction sets to satisfy the requirements of specific operational problems.	No	Yes	Yes	No
	I320	Programming	Concerned with the conversion of designs into computer instruction sets in order to satisfy the requirements of specific operational problems.	No	Yes	Yes	No
	I321	Procedural programming	Programming using procedural computer languages and environments, e.g. Pascal, Fortran, Cobol.	No	Yes	Yes	No
	I322	Object-oriented programming	Programming using object-oriented programming languages and environments.	No	Yes	Yes	No
	I323	Declarative programming	Programming using declarative programming languages, e.g. Prolog, Miranda.	No	Yes	Yes	No