

Book map

Unit	Topics
1 What is engineering? Listening · Speaking	<ul style="list-style-type: none"> • definition of engineering • branches of engineering • the history of mechanical engineering
2 Engineering achievements Reading · Writing	<ul style="list-style-type: none"> • engineering achievements in the 20th century • refrigeration and air conditioning • codes and standards for machines
3 Forces on materials Listening · Speaking	<ul style="list-style-type: none"> • materials in engineering • forces on materials: stress and strain • five types of forces
4 Computers in engineering Reading · Writing	<ul style="list-style-type: none"> • computer-assisted manufacturing (CAM) • computer integrated manufacturing (CIM) • using computers for research
5 MEMS and nanotechnology Listening · Speaking	<ul style="list-style-type: none"> • features of MEMS and nanotechnologies • design and applications • safety and ethical issues concerning nanotechnology
6 Friction Reading · Writing	<ul style="list-style-type: none"> • characteristics and types of friction • uses of friction in mechanical engineering design • tribology
7 The future of cars: Battery power Listening · Speaking	<ul style="list-style-type: none"> • battery production • car technologies: internal combustion engine, electric motors and hybrids • research and development
8 Engineering and sustainability Reading · Writing	<ul style="list-style-type: none"> • concepts in engineering and sustainability • sustainability challenges for engineering
9 Health and safety Listening · Speaking	<ul style="list-style-type: none"> • health and safety regulations • health and safety in the workplace • case studies: oil rig disasters • case study: rail accident
10 Accident analysis in construction Reading · Writing	<ul style="list-style-type: none"> • case study: Hyatt Regency Hotel collapse • case studies: 'design and build' contracts • start-up and expansion finance
11 Wind turbines Listening · Speaking	<ul style="list-style-type: none"> • development of wind power • wind turbines: design problems and solutions • horizontal and vertical axis turbines
12 Water engineering Reading · Writing	<ul style="list-style-type: none"> • types of water and water distribution • desalination technologies • laboratory report: flow in pipes

Vocabulary focus	Skills focus	Unit
<ul style="list-style-type: none"> words from general English with a special meaning in engineering prefixes and suffixes 	<p>Listening</p> <ul style="list-style-type: none"> preparing for a lecture predicting lecture content from the introduction understanding lecture organization choosing an appropriate form of notes making lecture notes <p>Speaking</p> <ul style="list-style-type: none"> speaking from notes 	1
<ul style="list-style-type: none"> English–English dictionaries: headwords · definitions · parts of speech · phonemes · stress markers · countable/uncountable · transitive/intransitive 	<p>Reading</p> <ul style="list-style-type: none"> using research questions to focus on relevant information in a text using topic sentences to get an overview of the text <p>Writing</p> <ul style="list-style-type: none"> writing topic sentences summarizing a text 	2
<ul style="list-style-type: none"> stress patterns in multi-syllable words prefixes 	<p>Listening</p> <ul style="list-style-type: none"> preparing for a lecture predicting lecture content making lecture notes using different information sources <p>Speaking</p> <ul style="list-style-type: none"> reporting research findings formulating questions 	3
<ul style="list-style-type: none"> computer jargon abbreviations and acronyms discourse and stance markers verb and noun suffixes 	<p>Reading</p> <ul style="list-style-type: none"> identifying topic development within a paragraph using the Internet effectively evaluating Internet search results <p>Writing</p> <ul style="list-style-type: none"> reporting research findings 	4
<ul style="list-style-type: none"> word sets: synonyms, antonyms, etc. the language of trends common lecture language 	<p>Listening</p> <ul style="list-style-type: none"> understanding ‘signpost language’ in lectures using symbols and abbreviations in note-taking <p>Speaking</p> <ul style="list-style-type: none"> making effective contributions to a seminar 	5
<ul style="list-style-type: none"> synonyms, replacement subjects, etc., for sentence-level paraphrasing 	<p>Reading</p> <ul style="list-style-type: none"> locating key information in complex sentences <p>Writing</p> <ul style="list-style-type: none"> reporting findings from other sources: paraphrasing writing complex sentences 	6
<ul style="list-style-type: none"> compound nouns fixed phrases from mechanical engineering fixed phrases from academic English common lecture language 	<p>Listening</p> <ul style="list-style-type: none"> understanding speaker emphasis <p>Speaking</p> <ul style="list-style-type: none"> asking for clarification responding to queries and requests for clarification 	7
<ul style="list-style-type: none"> synonyms nouns from verbs definitions common ‘direction’ verbs in essay titles (<i>discuss, analyze, evaluate, etc.</i>) 	<p>Reading</p> <ul style="list-style-type: none"> understanding dependent clauses with passives <p>Writing</p> <ul style="list-style-type: none"> paraphrasing expanding notes into complex sentences recognizing different essay/writing assignment types/structures: descriptive · analytical · comparison/evaluation · argument writing essay plans writing essays 	8
<ul style="list-style-type: none"> fixed phrases from health and safety fixed phrases from academic English 	<p>Listening</p> <ul style="list-style-type: none"> using the Cornell note-taking system recognizing digressions in lectures <p>Speaking</p> <ul style="list-style-type: none"> making effective contributions to a seminar referring to other people’s ideas in a seminar 	9
<ul style="list-style-type: none"> ‘neutral’ and ‘marked’ words technical and semi-technical words from engineering fixed phrases from academic English 	<p>Reading</p> <ul style="list-style-type: none"> recognizing the writer’s stance and level of confidence or tentativeness inferring implicit ideas <p>Writing</p> <ul style="list-style-type: none"> writing situation–problem–solution–evaluation essays/writing assignments using direct quotations compiling a bibliography/reference list 	10
<ul style="list-style-type: none"> words/phrases used to link ideas (<i>moreover, as a result, etc.</i>) stress patterns in noun phrases and compounds fixed phrases from academic English words/phrases related to wind energy and wind turbines 	<p>Listening</p> <ul style="list-style-type: none"> recognizing the speaker’s stance writing up notes in full <p>Speaking</p> <ul style="list-style-type: none"> building an argument in a seminar agreeing/disagreeing 	11
<ul style="list-style-type: none"> definitions referring back using pronouns and synonyms words/phrases to describe mechanical processes in water engineering common verb + noun phrases used in laboratory reports 	<p>Reading</p> <ul style="list-style-type: none"> understanding how ideas in a text are linked note-making from texts labelling a diagram <p>Writing</p> <ul style="list-style-type: none"> writing a comparison summary from notes writing a laboratory report section from notes 	12