

Engineering Communication Language Curriculum

1. Introduction

The Engineering Communication Language (ECL) curriculum is designed for International Engineering Graduates (IEGs) learning English as a second language in Canada.

As far as the developers are aware, this is the first Enhanced Language Training (ELT) curriculum in Canada to be extensively based on the use of a language portfolio.

The ECL curriculum has been designed around a series of 38 key workplace engineering communication tasks (22 categories with some subtasks) which were identified during needs analysis and later verified through industry focus groups and comparative analysis of other engineering language curricula.

Existing Canadian ELT curricula consulted during the development process included:

- Gear up ESTEC for Engineering (Waterloo Region District School Board)
- ELT Construction/Trades for Civil Engineers and Architects Curriculum (Algonquin College)
- Integrated Bridging Program for Internationally Educated Engineering Professionals (Edmonton Mennonite Centre for Newcomers (EMCN) 2009)

The 22 key tasks proved to match closely with those identified in a detailed earlier study *Benchmarking the Language Demands of the Engineering profession in Alberta* (David Watt and Andrea Cervatiuc, EMCN 2007)

The ECL curriculum aims to develop IEGs' skills in Canadian workplace communication and culture. The portfolio-based approach encourages learners to develop self-reflection and problem-solving skills and the ability to work with others as well as promoting continuous learning.

2. Level

The curriculum is aligned to the Canadian Language benchmarks (CLB) at levels 6-8, which research has indicated to be the key proficiency range for IEGs needing to develop their workplace English language skills in order to find and maintain employment in the engineering field. It would therefore be necessary that participants in a program based on this curriculum meet a minimum entry requirement of CLB 5 in all four skills, perhaps more ideally CLB 6.

Occasionally certain key workplace engineering communication tasks require language abilities above CLB 8 and this is noted in the curriculum outline below. These tasks (for example reading policy and procedure manuals) might need to be dealt with in separate modules or short courses.

3. Instructional hours

The framework allows teachers and curriculum planners complete freedom to select any combination of the 38 key workplace tasks. A shorter course based on the curriculum might therefore focus on

- one skill area, for example writing
- one task area, for example negotiating (with coverage of all four skills)
- a very specific skill and task combination such as reading policy and procedure manuals

A course covering the whole curriculum might require 250-300 classroom hours.

4. Structure and implementation of the curriculum

The ECL curriculum framework is designed to offer a wide range of options for teachers and course planners. It is structured directly around the 38 key engineering workplace tasks. Each of the 38 key tasks is divided into learning outcomes expressed in the form of engineering-focused can-do statements at Canadian Language Benchmarks 6-8. Each can-do statement is conveniently numbered for reference.

One possible approach to course planning might be to use the ECL curriculum framework as a needs analysis instrument and select course content based on needs and priorities identified

- in consultation with an employer or human resources department
- by learners themselves

In any implementation of the curriculum, it is envisaged that with assistance from their teachers learners would assess their current ability level against the can-do descriptors and identify their next learning priorities. Instructors are encouraged to develop lesson activities based on learners' needs and focusing on the appropriate key engineering workplace tasks.

Almost all of the key tasks can be performed to some degree at each of the three CLB levels 6-8. This allows instructors to develop tasks that

- (a) focus on achieving a particular proficiency level for the whole class or
- (b) allow participants at different levels of ability to work at their own individual level.

An example may make this clear.

In key task **1.4 - providing project progress updates**, a learner already able to meet the Benchmark 6 objective – [1.4(6)] - of giving a straightforward brief update will need to work on the Benchmark 7 – [1.4(7)] - objective of giving a more detailed update highlighting milestones achieved and describing recent events in detail. At Benchmark 7, a learner will need to add the Benchmark 8 – [1.4(8)] - skill of discussing a variety of possible ways to

move forward with the project and outlining the advantages and disadvantages of each option. An instructor might

(a) develop an activity where the whole class focuses on the Benchmark 7 objective of describing events and clarifying their sequence in time or

(b) using group work, self-access study or other methods devise an activity based on providing a progress update where some learners will be working on the CLB 7 objective and others on CLB 8.

5. Assessment

Learners are encouraged to track their progress using the can-do checklists. It is expected that during a course they will make progress on a number of key workplace engineering tasks. It is not necessarily the case that they will advance a whole benchmark in overall language proficiency during this time, but they will measurably be able to perform selected skills at a higher level. This should have a positive effect on motivation.

To carry out summative assessment, teachers will need to construct assessment tasks and scoring rubrics. These rubrics might draw on the individual task-based can-do descriptors as well as on global language proficiency descriptors at each level, and if necessary include more specific linguistic or skill-based criteria (for example, correct use of tenses to clarify a sequence of events in time or writing skills such as structuring a paragraph)

ECL Curriculum Outline and Assessment Framework

Speaking			
	CLB (6) CAN DO Statements Speaking	CLB (7) CAN DO Statements Speaking	CLB (8) CAN DO Statements Speaking
	Engineering Language Tasks	Engineering Language Tasks	Engineering Language Tasks
	In the engineering workplace, I can:	In the engineering workplace, I can:	In the engineering workplace, I can:
Engineering Tasks			
1.1 Interact with clients to identify client needs and discuss project requirements	1.1 (6) – Find out key information on what clients need or what is needed for a project and ask follow-up questions to clarify	1.1 (7) – Find out in a fair amount of detail what clients need or what is needed for a project. Confirm my own understanding of clients' needs by repeating and paraphrasing the information they tell me	1.1 (8) – Find out in depth what clients need or what is needed for a project, exploring a variety of options in detail and ensuring that what is agreed closely matches requirements
1.2 Obtain information about client systems	1.2 (6) – Ask effective questions to find out essential information about client systems	1.2 (7) – Find out essential information about client systems and confirm my understanding by repeating and paraphrasing what I have found out	1.2 (8) – Find out in-depth information about client systems, exploring any uncertainties in detail and ensuring that the information obtained is accurate and sufficient for working, planning or decision making
1.3 Inform clients of problems or delays encountered	1.3 (6) – Briefly explain and apologise for a delay. Explain briefly a problem that occurred and how it was solved. Make a simple suggestion about an unresolved engineering problem and give a straightforward explanation for my suggestion. Explain the probable result if a problem is not fixed	1.3 (7) – Give an apology and explanation for a project delay. Explain a problem that occurred, how it was solved and what steps have been taken to avoid the problem happening again. Make an extended suggestion on how to solve an immediate unresolved problem or make an improvement	1.3 (8) – Give a detailed apology and explanation for a project delay. Explain a problem that occurred, how it was solved and discuss what steps might best be taken to avoid the problem happening again. Indicate an unresolved problem or problems and suggest a variety of solutions, explaining the advantages and disadvantages of each
1.4 Provide clients with progress updates.	1.4 (6) – Give basic information about progress on a project	1.4 (7) – Give detailed information about progress on a project including milestones achieved and key events to date	1.4 (8) – Give detailed information about progress on a project including milestones achieved and key events to date and discuss various options for how to go forward and the advantages and disadvantages of each option
1.5 Interact with clients – general conversation management	1.5 (6a) – Say when I have only partly understood 1.5 (6b) Interrupt politely and ask people to repeat or clarify 1.5 (6c) Encourage people to keep speaking	1.5 (7a) – Use some strategies to keep the conversation going ('Could you tell me more about that?' 'So if I understand you correctly,....') 1.5 (7b) – Speak fluently enough to hold the floor (keep	1.5 (8a) – Use a variety of strategies to keep the conversation going 1.5 (8b) – Manage a conversation (invite others to make a comment, move the conversation away from

	1.5 (6d) Avoid answering a question	people's attention when I speak)	someone who is saying something irrelevant etc.)
		1.5 (7c) – Continue with the point I had been making after an interruption	1.5 (8c) – Continually check that others have understood (Does that make sense? Let me know if anything isn't clear, etc)
		1.5 (7d) – Change the topic in a conversation (on a different issue..., on a related question..., perhaps I should mention.....)	
2.1 Interact with supervisors or managers for advice and direction	2.1 (6) – Ask for specific materials or information I need from a supervisor	2.1 (7) – Let my supervisor or manager know I have a problem and ask for advice or support	2.1 (8) – Point out a problem to a manager or supervisor and present a variety of possible solutions, asking for the manager's view
2.2 Interact with supervisors or managers to discuss work and provide updates	2.2 (6) – Ask straightforward questions and give relevant information about an ongoing project	2.2 (7) – Discuss an ongoing project in detail with supervisors and make an extended suggestion on how to solve an immediate problem or make an improvement	2.2 (8) – Discuss ongoing projects in detail with supervisors and propose that certain changes be made, giving extended reasons
3.1 Consult with colleagues to obtain their input on challenging work problems.	3.1 (6) – Ask for specific materials or information I need from a co-worker	3.1 (7) – Let a co-worker know I have a problem and ask for advice or support	3.1 (8) – Point out a problem to a co-worker and present a variety of possible solutions, asking for the colleague's opinion
4.1 Contact suppliers to verify product availability and obtain equipment specifications	4.1 (6a) – Contact suppliers to confirm that a product is available and get specifications 4.1 (6b) – Contact suppliers to get equipment specifications and check understanding with a few follow-up questions	4.1 (7) – Contact suppliers to check equipment specifications and confirm understanding by repeating and paraphrasing the information they tell me	N/A
4.2 Contact suppliers to negotiate timely deliveries	4.2 (6) – Inform suppliers when materials are needed and briefly explain why	4.2 (7) – Negotiate with suppliers to get deliveries when needed	4.2 (8) – Negotiate delivery times with suppliers when there are complications. Make a persuasive argument why it is important to get needed supplies in time, but make concessions where necessary
5.1 Discuss specifications, prices and delivery times with suppliers	5.1 (6) – Ask suppliers about specifications, prices and delivery times and briefly explain my needs	5.1 (7) – Discuss specifications, prices and delivery times in detail with suppliers	5.1 (8) – Negotiate specifications, prices and delivery times with suppliers, making a persuasive argument where there are complications, but making concessions where necessary
5.2 Discuss ongoing work with co-workers and colleagues	5.2 (6) – Ask straightforward questions and give relevant information about an ongoing project	5.2 (7) – Discuss an ongoing project in detail with co-workers and make an extended suggestion on how to solve an immediate problem or make an improvement	5.2 (8) – Discuss ongoing projects in detail with co-workers and propose that certain changes be made, giving extended reasons

6.1 Make presentations to clients, colleagues and supervisors	6.1 (6) – Make a straightforward presentation, for example outlining progress so far on a project, giving the key features of a product or explaining a straightforward engineering process	6.1 (7) – Make a moderately complex presentation, for example outlining a variety of options and explaining the advantages and disadvantages of each, comparing and contrasting two products in detail or explaining a moderately complex engineering process. Give a summary of the main points of a presentation by someone else.	6.1 (8) – Make an extended presentation based on research from several different sources, for example explaining a complex engineering structure, system or process and making effective use of diagrams, charts and other visuals to support listeners' understanding. Analyse and contrast a variety of different options and opinions
6.2 Answer audience questions when making presentations to clients, colleagues and supervisors	6.2 (6) – When I make a presentation, answer straightforward factual questions from the audience	6.1 (7) – When I make a presentation, answer more difficult questions from the audience, such as giving detailed reasons for actions taken or commenting on audience suggestions	6.1 (8) – When I make a presentation, deal with most audience questions, for example addressing concerns raised or deflecting questions I would prefer not to answer. I can distinguish clearly between different opinions and how they compare with my own views

Listening

	CLB (6) CAN DO Statements Listening	CLB (7) CAN DO Statements Listening	CLB (8) CAN DO Statements Listening
	Engineering Language Tasks	Engineering Language Tasks	Engineering Language Tasks
Engineering Tasks	In the engineering workplace, I can:	In the engineering workplace, I can:	In the engineering workplace, I can:
7.1 Respond to phone calls from peers/ clients/ suppliers/ supervisors to make/ cancel appointments	7.1 (6) – Understand straightforward requests to make or cancel appointments, face-to-face or on the phone	7.1 (7) – Understand requests to make or cancel appointments, face-to-face or on the phone where there are complications	
7.2 Respond to phone calls from peers/ clients/ suppliers/ supervisors to request/ provide/ exchange information	7.2 (6) – Understand the key points in a phone conversation when someone provides or requests information about a project	7.2 (7) – Understand facts when people provide or request information about a project on the phone	7.7 (8) – Understand what people say and imply when they provide or request information about a project on the phone
8.1 Follow instructions provided person-to-person or over the phone	8.1 (6) – Understand and follow a straightforward set of instructions when given person-to-person. Not all the instructions will be given in the order in which they need to be carried out. For example how to reset a safety cut-out	8.1 (7) – Understand and follow a detailed set of instructions when given person-to-person or on the phone. For example how to replace a user-exchangeable spare part (such as a filter) in a machine	8.1 (8) – Understand and follow an extended set of multistep instructions given person-to-person or on the phone. For example how to install computer software
9.1 Participate in group discussions and meetings and demonstrate comprehension of main ideas and details	9.1 (6) – Understand and identify main ideas, supporting details, statements and examples in a small-group discussion or meeting	9.1 (7) – Understand detailed facts and some meanings that are implied but not stated in a group discussion or meeting. I can understand when things happened even when events are reported out of sequence	9.1 (8) – Understand and identify facts, opinions and attitudes in an extended group discussion about complex issues

9.2 Listen to presentations and demonstrate comprehension of main ideas and details	9.2 (6) – Understand and identify main ideas, supporting details, statements and examples from a presentation describing a product or a process	9.2 (7) – Understand detailed facts and some meanings that are implied but not stated in a detailed presentation describing a product or process. I can understand when things happened even when events are reported out of sequence	9.2 (8) – Understand a detailed and extended presentation and identify facts, opinions and attitudes. I can identify the main idea and organization of the presentation even when these are not explicitly stated
10.1 Listen to short business or training presentations on familiar topics	10.1 (6) – Understand a short training presentation, such as how to operate a machine.	10.1 (7) – Understand a detailed training presentation, such as on health and safety procedures	10.1 (8) – Understand an extended multistep training presentation such as on how to perform routine maintenance on a machine or recalibrate an instrument to specifications

Reading

	CLB (6) CAN DO Statements Reading	CLB (7) CAN DO Statements Reading	CLB (8) (9) and (10) CAN DO Statements Reading
Engineering Tasks	Engineering Language Tasks	Engineering Language Tasks	Engineering Language Tasks
11.1 Read memos, emails and notices from colleagues, managers, clients	In the engineering workplace, I can: 11.1 (6) – Read short memos, emails and notices from colleagues, managers and clients. The texts might contain advice, requests and factual details such as specifications	In the engineering workplace, I can: 11.1 (7) – Read moderately complex memos, emails and notices from colleagues, managers and clients. The texts might express appreciation or complaints or contain brief assessments, evaluations or advice	In the engineering workplace, I can: 11.1 (8) – Read detailed memos, emails and notices from colleagues, managers and clients. The texts might contain detailed assessments of a situation or proposals or responses to a complaint or conflict
12.1 Read product brochures and trade journals to learn about new products and innovations	12.1 (6) – Read product brochures with technical specifications	12.1 (7) – Read product brochures with detailed descriptions	12.1 (8) – Read extended product descriptions, comparisons and evaluations, or about industry trends, for example in an industry journal. Evaluate the perspective and possible bias of the author, distinguishing fact from opinion
13.1 Read safety codes, regulations and codes of ethics, seeking information, getting the “gist” or to understand and learn	13.1 (6) – Read simple safety instructions and act on them (for example ‘goggles must be worn at all times when operating this machine’)	13.1 (7) – Read simple safety regulations and act on them (for example ‘to ensure adequate ventilation, a clearance of at least 30cm must be left around the machine on all sides’)	13.1 (8) – Read selections from texts about workplace safety precautions, or rights and responsibilities of employees, clients or suppliers. Understand factual and inferred meanings in statements of rules and regulations, laws and norms of behaviour (where the content is largely familiar)
			13.1 (9) – Read policy and procedure manuals, equipment installation manuals, user product guides and health and

13.1 Read project specifications	N/A	N/A	<p>safety advisories. Compare information across paragraphs and sections. Paraphrase and summarize key points. Understand information where the content is partly unfamiliar, but is relevant to immediate needs</p>
14.1 Read policy and procedure manuals			<p>13.2 (8) – Understand key information from a project specification</p> <p>13.2 (9) – Understand a project specification, locating and combining information from different sections</p> <p>14.1 (8) – Read selections from texts about workplace safety precautions, or rights and responsibilities of employees, clients or suppliers. Understand factual and inferred meanings in statements of rules and regulations, laws and norms of behaviour (where the content is largely familiar)</p>
15.1 Interpret visual materials – charts, tables, sketches, drawings	<p>15.1 (6) – Understand and discuss or act on the information in a straightforward chart, table or drawing, for example a work schedule, flow chart or project time line</p>	<p>15.1 (7) – Understand and discuss or act on the information in a moderately complex chart, table or drawing, for example showing an industrial process or plans for a building</p>	<p>14.1 (9) – Read policy and procedure manuals. Compare information across paragraphs and sections. Paraphrase and summarize key points. Understand information where the content is partly unfamiliar, but is relevant to immediate needs</p> <p>14.1 (10) – Read policy and procedure manuals, legal and administrative procedures, scientific and experimental procedures. Compare information across paragraphs and sections. Paraphrase and summarize key points. Understand extensive information where the content is partly unfamiliar, and which may be relevant for background information rather than for immediate needs</p> <p>15.1 (8) – Understand the information in charts, tables, graphs and drawings and explain it in an alternate form, such as a short presentation or a written paragraph in an email</p>

Writing			
	CLB (6) CAN DO Statements Writing	CLB (7) CAN DO Statements Writing	CLB (8) CAN DO Statements Writing
	Engineering Language Tasks	Engineering Language Tasks	Engineering Language Tasks
Engineering Tasks	In the engineering workplace, I can:	In the engineering workplace, I can:	In the engineering workplace, I can:
16.1 Write a memo or email	16.1 (6) Write a short memo or email asking for or providing straightforward information. Briefly describe an event, a process or sequence of events. Identify an appropriate template and supplement it with information relevant to my situation	16.1 (7) Write a 1-2 paragraph memo or email asking for or providing detailed information. Give a detailed description of an event, a process or sequence of events. Make or respond to a straightforward complain or resolve an uncomplicated error Identify and recreate an appropriate structure for the document (e.g. summary, background, action, closure)	16.1 (8) Write a 3-4 paragraph memo or email making or responding to a complaint or resolving an error and giving a detailed explanation and adopting an appropriate tone for an apology or to distinguish between different levels of dissatisfaction. Give a detailed analysis of an event, explanation of causes and consequences, evaluation of possible courses of action and recommendations
16.2 Write a formatted invitation or thank-you message	16.2 (6) Identify an appropriate template for a short standard message (e.g. an invitation or thank-you note). Format the template and supplement it with information relevant to my situation	16.2 (7) Write a 1-2 paragraph invitation or thank-you note giving details about the event I am inviting someone to or explaining why I enjoyed something or found it useful or helpful	N/A
16.3 Complete logbooks and other forms	16.3 (6) Fill out a few words or short sentences in a logbook for example to record maintenance completed or items received	16.3 (7) Write a short paragraph in a logbook, for example to record a customer query or complaint	N/A
17.1 Fill out documents to purchase equipment and work orders	17.1 (6) Fill out a purchase or work order, selecting key product specs from the manual and describing them in list form or in 1-2 simple sentences	17.1 (7) Fill out a purchase or work order, writing a paragraph to describe in detail the product or job needed and if necessary adding a brief explanation of why it is necessary or pointing out possible alternatives	N/A
18.1 Take notes from a presentation or meeting	18.1 (6) Take brief notes from a short presentation or meeting	18.1 (7) Take notes from a presentation or meeting and briefly summarize the content	18.1 (8) Take notes from a live, video- or audio-taped training course or from a teleconference. Take organized notes and summarize them so that other people can understand
18.2 Take phone messages	18.2 (6) Take down everyday phone messages (5-7 details)	18.2 (7) Take down notes from longer phone messages, for example from voice mail or public information lines (7-10 details)	18.2 (8) Take down a phone message on most familiar technical topics. Organize my notes and summarize them so that other people can understand
19.1 Write an outline or plan	19.1 (6) Write a brief plan in	19.1 (7) Write outline notes for a presentation I need to make.	19.1 (8) Write extended notes for a presentation or report

	note form.	Write a plan outlining the key steps of a project or process	with main ideas and key details and examples. Write a plan for a project, outlining key steps, key requirements and potential issues
19.2 Write a summary of a text	19.2 (6) Select sentences from a short text on familiar topic which in my opinion express key ideas and arrange them in sequence to create a short summary	19.2 (7) Identify key ideas in a text of several paragraphs on an engineering topic and summarize the text into a paragraph without losing essential information	19.2 (8) Summarize a 1-2 page engineering article or report into one or two paragraphs without losing essential information, at the same time showing my own views on the ideas in the text and distinguishing them from the author's ideas
20.1 Write routine letters to suppliers or contractors	20.1 (6) Write a short letter or note to a supplier or contractor to order a product or service, selecting the most important product specifications from a manual and restating them in the letter	20.1 (7) Write a letter of one or two paragraphs to a supplier or contractor giving a detailed description of a desired product or service. Describe problems with previous orders and suggest changes	20.1 (8) Write a letter giving an extended description of product specifications and explicitly link them to my company's needs. Compose a 2-3 paragraph letter to express and explain my views on quality of service, adopting an appropriate tone to distinguish between levels of satisfaction or dissatisfaction
21.1 Write short status or progress reports	21.1 (6) Write a short progress update for internal use via email briefly describing activities to date, outlining successes and failures and indicating next steps	21.1 (7) Write a structured status or progress report 2 or 3 paragraphs in length giving a detailed description of processes and events. Outline the sequence of events, propose next steps and suggest alternatives	21.1 (8) Write a structured status or progress report 3-5 paragraphs in length analyzing activities and events and explaining their causes and consequences. Compare planned next steps with alternative solutions and give recommendations
22.1 Write specifications, procedures to be followed by technologists or workers	22.1 (6) Write straightforward specifications and procedures for technologists or workers in the form of bullet points or a list of sentences.	22.1 (7) Write a 1-2 paragraph memo with specifications and procedures to be followed by technologists or workers, giving detailed step-by-step instructions and listing process requirements and expected results	22.1 (8) Convert relevant standards, guidelines and specifications into a page (3-5 paragraphs) of clear step-by-step instructions for technologists or workers. Clearly explain the links between instructions, processes and results
22.2 Report an incident	22.2 (6) Fill in an incident report form, listing the key details such as names, times and places and describing the situation in 2-3 sentences	22.2 (7) Write 2-3 paragraphs describing the detailed sequence of events leading up to an incident. Explain how to prevent the incident from happening again	22.2 (8) Write a page (3-5 paragraphs) providing detailed analysis of an incident and explaining causes and effects. Map completed actions against safety standards. Outline a variety of alternative corrective measures and their likely outcomes and give a recommendation