Dalhousie Faculty of Engineering

COURSE OUTCOMES WORKSHEET

COURSE NUMBER AND NAME_ECED2200. Digital Circuits_____ **PROGRAM / AU** _Electrical Engineering___

COMPILED BY (instructor): _Yuan Ma_____ **CHECKED BY** _____, _____

COURSE OUTCOMES (a maximum of 6 - 8, which should **NOT** just be a list of topics) (Outcomes should include: a **VERB**, **WHAT THE STUDENT WILL LEARN**, and the **CONTEXT** in which they will apply their learning. **How the outcomes will be measured** should also be noted (assignments, project, exam, labs, field trip reports, research reports, presentations, student electronic portfolios & questionnaires, debates, log books, case studies .... Rubrics will probably be needed to measure some of these.) **Circle on the second page which Graduate Attributes will be measured**.

Course Outcome 1:

verb:	what the student will learn:	context of learning (where applied):
Use	Karnaugh maps and Boolean Algebra to simplify Boolean functions	for the synthesis of combinational logic circuits (1A)

Measurement means: __assignments, exams_____

Course Outcome 2:

verb:	what the student will learn:	context of learning (where applied):
Use	Basic logic gates and sequential elements in	building key digital circuit components such as registers and counters (2B)

Measurement means: __assignments, labs, final exam_____

Course Outcome 3:

verb:	what the student will learn:	context of learning (where applied):
Design	synchronous counters and finite state machines (FSM)	for the implementation of basic controllers (4B)

Measurement means: ___assignments, final exam_____

Course Outcome 4:

verb:	what the student will learn:	context of learning (where applied):
Use	a computer simulator package and a hardware kit	for the layout, evaluation and implementation of basic circuits (5A)

Measurement means: ___labs_____

Course Outcome 5:

verb:	what the student will learn:	context of learning (where applied):
Exercise	self-discipline, punctuality and responsibility	for assignment self-checking, lab preparation and lab safety (10B)

Measurement means: ___assignments, pre-labs_____

DALHOUSIE UNIVERSITY

Graduate Attribute Performance Indicators

			Indicators		
			A	B	C
Attributes	1	**Knowledge Base for Engineering**	Explain and apply mathematics for analysis and synthesis in engineering.	Explain and apply foundational knowledge in natural sciences. Understand and use the scientific method.	Explain and apply knowledge in engineering science.
	2	**Problem Analysis**	Identify and define a technical problem.	Break a complex problem into manageable elements, using appropriate assumptions.	Perceive sources of error and uncertainty, and quantify their significance.
	3	**Investigation**	Collect, assess, critique and use information from appropriate sources, with appropriate citation	Design and/or perform discipline-specific experimental or data collection procedures, including safety/ethical considerations	Analyze and interpret data and form conclusions
	4	**Design**	Define functional requirements	Conceptualize and evaluate alternative approaches; perform appropriate design to fit requirements	Synthesize components into an integrated whole, considering constraints, risks, and tradeoffs.
	5	**Use of Engineering Tools**	Demonstrate proficiency in appropriate current computer-based packages.	Identify appropriate engineering tools to apply to a problem, identify their limitations and inherent assumptions.	Be competent in the use of current engineering tools.
	6	**Individual and Team Work**	Manage time and processes effectively, prioritizing competing demands to achieve goals.	Show initiative and leadership while respecting others' agreed roles in a team.	Be a responsible, respectful and contributing member of a team.
	7	**Communication Skills**	Produce clear engineering diagrams, drawings and/or sketches.	Be effective in written communications. Maintain professional journals and records; produce clear technical reports with appropriate citations.	Be effective in oral communications.
	8	**Professionalism**	Demonstrate professional behaviour; adhere to student code of conduct and rules of academic integrity.	Identify and apply relevant discipline statutory requirements and codes.	Understand and practice the appropriate occupational health and safety regulations. Demonstrate an awareness of the responsibility to protect the public interest.
	9	**Impact of Engineering on Society**	Identify, review and plan for safety and sustainability issues. Develop approaches for maintaining safety and sustainability.	Explain interactions between technical systems and social, cultural, environmental, economic and political contexts.	Assess risk in relation to users, the community and the environment.
	10	**Ethics and Equity**	Discuss and apply the engineering code of Ethics.	Understand accountability, liability and professional responsibility.	Treat all persons fairly, without bias, and with respect.
	11	**Economics and Project Management**	Conduct engineering economic analyses using time value of money, inflation and taxes.	Plan, control and monitor engineering projects, using quantitative techniques such as resource analysis and scheduling.	Implement project plans, including procedures for the management of change and risk.
	12	**Life-long Learning**	Explain requirements for continuing professional development and how these can be met.	Recognize limits to own knowledge, seek advice, and determine areas for development.	Demonstrate independent learning.