

**H.H. Arnold High School
Electronics and Technology Education
Frank C. Pendzich**

ASSIGNMENT CHECK-LIST

Generated: 09/05/02

Course # Course Title
VEE401 **Digital Electronics II**

Area Competency Category
A **DIGITAL ELECTRONICS** **VOCATIONAL**

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
0	Orientation to Electricity/Electronics Curriculum	<u>mm/dd/yy</u> (/ /)	<u>mm/dd/yy</u> (/ /)

The student will demonstrate their knowledge of the procedures used in the Technology Education Curriculum. They will complete a series of forms, set up a notebook, login to the network, use electronic mail, print out assignment check-lists and performance reports, as well as successfully complete an examine on the skills necessary to be successful in this course.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	A0a	Reading Assignment	Student Orientation Packet
b	()	A0b	Homework Assignment	The Student Record
c	()	A0c	Assignment Sheet	Accepted Use Agreement
d	()	A0d	Assignment Sheet	Student Record of Counseling
e	()	A0e	Notebook	Notebook Review
f	()	A0f	Performance Test	Using the Local Area Network (LAN)
g	()	A0g	Performance Test	Using Electronic Mail
h	()	A0h	Performance Test	The Assignment Check-List
i	()	A0i	Performance Test	The Student Progress Report
j	()	A0j	Performance Test	Navigating the Tech Ed Web Page
k	()	A0k	Computer Test	Electricity/Electronics Orientation

Lastname, First

Student Number

Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
1	Digital Electronics - (Theory)	<u>mm/dd/yy</u> (/ /)	<u>mm/dd/yy</u> (/ /)

The student will demonstrate their knowledge of digital electronics theory by completing exercises and an exam on the topic. The student will describe the following concepts:

- Digital circuits and how they work
- Digital circuit applications
- The digital pulse created with a mechanical switch
- Introduction to the free-running clock oscillator
- Simple logic indicators and digital testing devices

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>		
a	()	A1a	Video Tape Inst.	Tape #1 Intro. - Digital Techniques		
b	()	A1b	Reading Assignment	Digital Electronics		
			Source: Digital Electronics			
			Unit: 1	Page: 1 TO 18	Min. Score: %	
c	()	A1c	Homework Assignment	Chapter Review Questions 1 to 15.		
			Source: Digital Electronics			
			Unit: 1	Page: 17	Min. Score: 85%	
d	()	A1d	Computer Aided Inst.	Introduction to Digital Electronics		
			Source: Digital Magic Software - EKI Prep Course			
			Unit: DML1	Page:	Min. Score: 85%	
e	()	A1e	Computer Aided Inst.	Logic Circuits		
			Source: Digital Magic Software - EKI Prep Course			
			Unit: DML2	Page:	Min. Score: 85%	
f	()	A1f	Computer Aided Inst.	Using the Solderless Circuit Board		
			Source: Digital Magic Software - EKI Prep Course			
			Unit: DML3	Page:	Min. Score: 85%	
g	()	A1g	Computer Aided Inst.	A Logic Indicator		
			Source: Digital Magic Software - EKI Prep Course			
			Unit: LPD01	Page:	Min. Score: 85%	
h	()	A1h	Computer Test	Digital Electronics		
i	()	A1i	Notebook	Notebook Review		

 Lastname, First

 Student Number

 Period

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Course # Course Title
VEE401 **Digital Electronics II**

Area Competency Category
B **DIGITAL ELECTRONICS NUMBER SYSTEMS** **VOCATIONAL**

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
1	Digital Electronics Number Systems (Theory)	<small>mm/dd/yy</small> (/ /)	<small>mm/dd/yy</small> (/ /)

The student will be able to convert common decimal numbers to binary numbers and binary numbers to common decimal numbers. The student will also convert between the binary and hexadecimal and the decimal and hexadecimal number systems. Finally, the student will make conversions binary and octal and decimal and octal. The student will demonstrate their skills by completing assigned problems as well as an exam on this topic.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>	<u>Min. Score</u>
a	()	B1a	Reading Assignment Source: Digital Electronics Unit: 2	Numbers We Use in Digital Electronics Page: 19 - 28	85%
b	()	B1b	Homework Assignment Source: Digital Electronics Unit: 2	Chapter Review Questions 2-1 to 2-15 Page: 26 & 27	85%
c	()	B1c	Computer Aided Inst. Source: Digital Magic Software - EKI Prep Course Unit: DML5	Numbering Systems & Binary Page:	85%
d	()	B1d	Video Tape Inst.	Basic Digital Math - LE14	
e	()	B1e	Computer Test	Digital Electronics Number Systems	
f	()	B1f	Notebook	Notebook Review	

Lastname, First

Student Number

Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

<u>Task</u> 2	<u>Task/Skill</u> Number Systems; Binary Numbers and Encoders	<u>Started</u> mm/dd/yy (/ /)	<u>Completed</u> mm/dd/yy (/ /)
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The student will demonstrate and verify that a decimal number can be encoded and represented by a binary number. They will construct a decimal to binary coded decimal (BCD) converter circuit and then analyze possible trouble symptoms of an encoder logic circuit.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	B2a	Exercise Source: Digital Electronics Concepts and Applications Unit: 5	Number Systems; Binary Numbers/Encoders Page: 5-1 - 5-7 Min. Score: 85%
b	()	B2b	Performance Test	Number Systems; Binary Numbers/Encoders
c	()	B2c	Technical Report	Number Systems; Binary Numbers/Encoders

<u>Task</u> 3	<u>Task/Skill</u> Using An Encoder	<u>Started</u> mm/dd/yy (/ /)	<u>Completed</u> mm/dd/yy (/ /)
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The student will construct a 74147 encoder integrated circuit to convert decimal numbers to binary numbers. The circuit will use a decimal input key pad, encoder and inverter IC, and LED indicators to perform this task. The student will demonstrate their skill by completing a truth table comparing the inputs and outputs of the circuit.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	B3a	Exercise Source: Digital Electronics Activities Manual Unit: 2-2	Using an Encoder Page: 11 - 13 Min. Score: 85%
b	()	B3b	Performance Test	Using an Encoder
c	()	B3c	Technical Report	Using an Encoder

<u>Task</u> 4	<u>Task/Skill</u> Using A Decoder	<u>Started</u> mm/dd/yy (/ /)	<u>Completed</u> mm/dd/yy (/ /)
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The student will construct a 7442 decoder IC circuit to convert binary numbers to decimal numbers. The circuit will include binary switches, a decoder and inverter IC, and an LED display to perform this task. The student will demonstrate their skill by completing a truth table comparing the inputs and outputs of the circuit.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	B4a	Exercise Source: Digital Electronics Activities Manual Unit: 2-3	Using A Decoder Page: 13 - 15 Min. Score: 85%

Lastname, First

Student Number

Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
b	()	B4b	Performance Test	Using A Decoder
c	()	B4c	Technical Report	Using A Decoder

 Lastname, First

 Student Number

 Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
b	()	C2b	Performance Test	AND/OR Logic Gates; NOT Circuits
c	()	C2c	Technical Report	AND/OR Logic Gates; NOT Circuits

Task Task/Skill Started Completed
3 **NAND/NOR Logic Gates** mm/dd/yy mm/dd/yy
 (/ /) (/ /)

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	C3a	Exercise Source: Digital Electronics Concepts and Applications Unit: 3	NAND/NOR Logic Gates Page: 3-1 - 3-7 Min. Score: 85%
b	()	C3b	Performance Test	NAND/NOR Logic Gates
c	()	C3c	Technical Report	NAND/NOR Logic Gates

Task Task/Skill Started Completed
4 **XOR and XNOR Gates** mm/dd/yy mm/dd/yy
 (/ /) (/ /)

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	C4a	Exercise Source: Digital Electronics Activities Manual Unit: 3-6	XOR and XNOR Gates Page: 29 & 32 Min. Score: 85%
b	()	C4b	Performance Test	XOR and XNOR Gates
c	()	C4c	Technical Report	XOR and XNOR Gates

Task Task/Skill Started Completed
5 **Gates With More Than Two Inputs** mm/dd/yy mm/dd/yy
 (/ /) (/ /)

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	C5a	Exercise Source: Digital Electronics Activities Manual Unit: 3-8	Gates With More Than Two Inputs Page: 34 - 36 Min. Score: 85%
b	()	C5b	Performance Test	Gates With More Than Two Inputs

 Lastname, First

 Student Number

 Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
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c	()	C5c	Technical Report	Gates With More Than Two Inputs
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<u>Task</u>	<u>Task/Skill</u>	<u>Started</u> <u>mm/dd/yy</u> (/ /)	<u>Completed</u> <u>mm/dd/yy</u> (/ /)
6	Dual Gating Functions		

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
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a	()	C6a	Exercise Source: Digital Electronics Concepts and Applications Unit: 4	Symbolic Notation/Practical Gate Applic. Page: 4-1 - 4-7 Min. Score: 85%
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b	()	C6b	Performance Test	Symbolic Notation/Practical Gate Applic.
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c	()	C6c	Technical Report	Symbolic Notation/Practical Gate Applic.
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Lastname, First

Student Number

Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

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Course # Course Title
VEE401 **Digital Electronics II**

Area Competency Category
D **USING BINARY LOGIC GATES** **VOCATIONAL**

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
1	Using Binary Logic Gates (Theory)	<small>mm/dd/yy</small> (/ /)	<small>mm/dd/yy</small> (/ /)

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>	<u>Min. Score:</u>	<u>85%</u>
a	()	D1a	Reading Assignment Source: Digital Electronics Unit: 4	Using Binary Logic Gates Page: 51 - 76	Min. Score:	85%
b	()	D1b	Homework Assignment Source: Digital Electronics Unit: 4	Chapter Review Questions 4-1 to 4-18. Page: 72 - 74	Min. Score:	85%
c	()	D1c	Video Tape Inst. Source: Digital Techniques Video Course Unit: 3201-05	Logic Circuit Characteristics Page:	Min. Score:	85%
d	()	D1d	Video Tape Inst. Source: Digital Techniques Video Course Unit: 3201-08	Boolean Algebra Basics Page:	Min. Score:	85%
e	()	D1e	Video Tape Inst. Source: Digital Techniques Video Course Unit: 3201-09	Boolean Rules Page:	Min. Score:	85%
f	()	D1f	Computer Test	Using Binary Logic Gates		
g	()	D1g	Notebook	Notebook Review		

Lastname, First

Student Number

Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
2	Boolean Algebra	<u>mm/dd/yy</u> (/ /)	<u>mm/dd/yy</u> (/ /)

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	D2a	Exercise Source: Digital Electronics Concepts and Applications Unit: 26	Boolean Algebra Page: 26-1 - 26-7 Min. Score: 85%
b	()	D2b	Performance Test	Boolean Algebra
c	()	D2c	Technical Report	Boolean Algebra

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
3	Simulating Problems With Logic Circuits	<u>mm/dd/yy</u> (/ /)	<u>mm/dd/yy</u> (/ /)

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	D3a	Exercise Source: Digital Electronics Concepts and Applications Unit: 27	Simulating Problems With Logic Circuits Page: 27-1 - 27-7 Min. Score: 85%
b	()	D3b	Performance Test	Simulating Problems With Logic Circuits
c	()	D3c	Technical Report	Simulating Problems With Logic Circuits

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
4	Circuit Simplification; The Karnaugh Map	<u>mm/dd/yy</u> (/ /)	<u>mm/dd/yy</u> (/ /)

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	D4a	Exercise Source: Digital Electronics Concepts and Applications Unit: 28	Circuit Simplification; The Karnaugh Map Page: 28-1 - 28-11 Min. Score: 85%
b	()	D4b	Performance Test	Circuit Simplification; The Karnaugh Map
c	()	D4c	Technical Report	Circuit Simplification; The Karnaugh Map

Lastname, First

Student Number

Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

Task
5 Task/Skill
Simplifying Logic Circuits

Started Completed
mm/dd/yy mm/dd/yy
 (/ /) (/ /)

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>	
a	()	D5a	Exercise Source: Digital Electronics Activities Manual Unit: 4-3	Simplifying Logic Circuits Page: 47 & 48	Min. Score: 85%
b	()	D5b	Performance Test	Simplifying Logic Circuits	
c	()	D5c	Technical Report	Simplifying Logic Circuits	

 Lastname, First

 Student Number

 Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

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Course # Course Title
VEE401 **Digital Electronics II**

Area Competency Category
E **IC SPECIFICATIONS AND SIMPLE INTERFACING** **VOCATIONAL**

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
1	IC Specifications and Simple Interfacing (Theory)	mm/dd/yy (/ /)	mm/dd/yy (/ /)

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>	<u>Min. Score:</u>	<u>85%</u>
a	()	E1a	Reading Assignment Source: Digital Electronics Unit: 5	IC Spec. and Simple Interfacing Page: 77 - 102	Min. Score:	85%
b	()	E1b	Homework Assignment Source: Digital Electronics Unit: 5	Chapter Review 5-2 to 5-40 (Even) Page: 99 & 100	Min. Score:	85%
c	()	E1c	Video Tape Inst. Source: Digital Techniques Video Course Unit: 3201-06	TTL/ECL Logic Circuits Page:	Min. Score:	85%
d	()	E1d	Video Tape Inst. Source: Digital Techniques Video Course Unit: 3201-07	MOS/I2L Logic Circuits Page:	Min. Score:	85%
e	()	E1e	Computer Aided Inst.	Rocky's Boots		
f	()	E1f	Computer Test	IC Specs. and Simple Interfacing		
g	()	E1g	Notebook	Notebook Review		

Lastname, First

Student Number

Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

<u>Task</u> 2	<u>Task/Skill</u> Interfacing Switches with TTL	<u>Started</u> mm/dd/yy (/ /)	<u>Completed</u> mm/dd/yy (/ /)
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<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>	
a	()	E2a	Exercise Source: Digital Electronics Activities Manual Unit: 5-2	Interfacing Switches with TTL Page: 59 - 63	Min. Score: 85%
b	()	E2b	Performance Test	Interfacing Switches with TTL	
c	()	E2c	Technical Report	Interfacing Switches with TTL	

<u>Task</u> 3	<u>Task/Skill</u> Interfacing LEDs with TTL and CMOS	<u>Started</u> mm/dd/yy (/ /)	<u>Completed</u> mm/dd/yy (/ /)
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<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>	
a	()	E3a	Exercise Source: Digital Electronics Activities Manual Unit: 5-3	Interfacing LEDs with TTL and CMOS Page: 63 - 66	Min. Score: 85%
b	()	E3b	Performance Test	Interfacing LEDs with TTL and CMOS	
c	()	E3c	Technical Report	Interfacing LEDs with TTL and CMOS	

<u>Task</u> 4	<u>Task/Skill</u> Interfacing CMOS with Buzzers, Relays, and Motors	<u>Started</u> mm/dd/yy (/ /)	<u>Completed</u> mm/dd/yy (/ /)
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<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>	
a	()	E4a	Exercise Source: Digital Electronics Activities Manual Unit: 5-5	I.F. CMOS with Buzzers/Relays/Motors Page: 68-70	Min. Score: 85%
b	()	E4b	Performance Test	I.F. CMOS with Buzzers/Relays/Motors	
c	()	E4c	Technical Report	I.F. CMOS with Buzzers/Relays/Motors	

Lastname, First

Student Number

Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

<u>Task</u> 3	<u>Task/Skill</u> Dual Alphanumeric Read-Out	<u>Started</u> mm/dd/yy (/ /)	<u>Completed</u> mm/dd/yy (/ /)
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<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>	
a	()	F3a	Lab Experiment Source: Advanced Digital Electronics Unit: 3	Dual Alphanumeric Read-Out Page: 3-1 TO 3-6	Min. Score: 85%
b	()	F3b	Performance Test	Dual Alphanumeric Read-Out	
c	()	F3c	Technical Report	Dual Alphanumeric Read-Out	

<u>Task</u> 4	<u>Task/Skill</u> Code Translators	<u>Started</u> mm/dd/yy (/ /)	<u>Completed</u> mm/dd/yy (/ /)
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<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>	
a	()	F4a	Lab Experiment Source: Digital Electronics Activities Manual Unit: 6-3	Code Translators Page: 79-82	Min. Score: 85%
b	()	F4b	Performance Test	Code Translators	
c	()	F4c	Technical Report	Code Translators	

Lastname, First

Student Number

Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
b	()	G2b	Performance Test	Memory Circuits - The R-S Flip-Flop
c	()	G2c	Technical Report	Memory Circuits - The R-S Flip-Flop

Task Task/Skill Started Completed
3 **Type-T and Type-D Flip-Flops** mm/dd/yy mm/dd/yy
 (/ /) (/ /)

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	G3a	Lab Experiment Source: Digital Electronics Concepts and Applications Unit: 9	Type-T and Type-D Flip-Flops Page: 9-1 TO 9-8 Min. Score: 85%
b	()	G3b	Performance Test	Type-T and Type-D Flip-Flops
c	()	G3c	Technical Report	Type-T and Type-D Flip-Flops

Task Task/Skill Started Completed
4 **J-K Flip-Flop** mm/dd/yy mm/dd/yy
 (/ /) (/ /)

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	G4a	Lab Experiment Source: Digital Electronics Concepts and Applications Unit: 10	J-K Flip-Flop Page: 10-1 TO 10-8 Min. Score: 85%
b	()	G4b	Performance Test	J-K Flip-Flop
c	()	G4c	Technical Report	J-K Flip-Flop

Task Task/Skill Started Completed
5 **Using a 4-Bit TTL Latch** mm/dd/yy mm/dd/yy
 (/ /) (/ /)

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	G5a	Lab Experiment Source: Digital Electronics Activities Manual Unit: 7-5	Using a 4-Bit TTL Latch Page: 100 TO 103 Min. Score: 85%
b	()	G5b	Performance Test	Using a 4-Bit TTL Latch

 Lastname, First

 Student Number

 Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
c	()	G5c	Technical Report	Using a 4-Bit TTL Latch

 Lastname, First

 Student Number

 Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
b	()	H2b	Performance Test	Ripple Counter
c	()	H2c	Technical Report	Ripple Counter

Task Task/Skill Started Completed
3 **The Binary Counter** mm/dd/yy mm/dd/yy
 (/ /) (/ /)

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	H3a	Lab Experiment Source: Advanced Digital Electronics Unit: 6	The Binary Counter Page: 6-1 TO 6-5
b	()	H3b	Performance Test	The Binary Counter
c	()	H3c	Technical Report	The Binary Counter

Min. Score: 85%

Task Task/Skill Started Completed
4 **The BCD Counter** mm/dd/yy mm/dd/yy
 (/ /) (/ /)

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	H4a	Lab Experiment Source: Advanced Digital Electronics Unit: 7	The BCD Counter Page: 7-1 TO 7-9
b	()	H4b	Performance Test	The BCD Counter
c	()	H4c	Technical Report	The BCD Counter

Min. Score: 85%

Task Task/Skill Started Completed
5 **TTL IC Synchronous Up/Down Counters** mm/dd/yy mm/dd/yy
 (/ /) (/ /)

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	H5a	Lab Experiment Source: Digital Electronics Activities Manual Unit: 8-4	TTL IC Synchronous Up/Down Counters Page: 120 TO 122
b	()	H5b	Performance Test	TTL IC Synchronous Up/Down Counters

Min. Score: 85%

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 Student Number

 Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
c	()	H5c	Technical Report	TTL IC Synchronous Up/Down Counters

 Lastname, First

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**H.H. Arnold High School
Electronics and Technology Education
Frank C. Pendzich**

ASSIGNMENT CHECK-LIST

Generated: 09/05/02

Course # Course Title
VEE401 **Digital Electronics II**

Area Competency Category
N **DIGITAL ELECTRONICS SEMESTER EXAM** **ACADEMIC**

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
1	Written Exam	mm/dd/yy (/ /)	mm/dd/yy (/ /)

The student will successfully complete a comprehensive examination regarding the concepts, principles, and applications of digital electronics and digital electronic circuitry. The exam will be proctored by computer.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	N1a	Computer Test	Semester Exam

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
2	Practical Exam	mm/dd/yy (/ /)	mm/dd/yy (/ /)

The student will successfully complete a practical examination based upon the understanding of digital circuitry and the appropriate use of test instruments. The test will be proctored by computer and will include troubleshooting scenarios.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	N2a	Computer Test	The Logic Probe - Test Circuit

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
3	Circuit Construction	mm/dd/yy (/ /)	mm/dd/yy (/ /)

The student will construct a digital logic circuit using discrete components and an solderless breadboard. The project will be constructed from schematic only and will be tested in stages. To receive credit for this task, the entire circuit must function as specified.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	N3a	Performance Test	Decade Counter - Clock Circuit
b	()	N3b	Performance Test	Decade Counter - Counter Circuit
c	()	N3c	Performance Test	Decade Counter - Seven Segment Display

Lastname, First

Student Number

Period

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Generated: 09/05/02

Course # Course Title
VEE401 **Digital Electronics II**

Area Competency Category
Y **DIGITAL CIRCUITS** **VOCATIONAL**

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
1	Introduction to Digital Electronics	mm/dd/yy (/ /)	mm/dd/yy (/ /)

The student will demonstrate their knowledge of basic digital electronics. They will inventory their parts kit, complete lessons on logic circuits, and construct a logic indicator circuit. They will demonstrate their skill by completing computer aided instruction lessons and obtaining a perfect score on associated quizzes.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>		
a	()	Y1a	Reading Assignment Source: Digital Magic Guide - EKI Mr. Circuit II	Introduction Page		
b	()	Y1b	Reading Assignment Source: Digital Magic Guide - EKI Mr. Circuit II Unit: LESSON 1 Page: 3	Introduction to Digital Electronics	Min. Score:	85%
c	()	Y1c	Computer Aided Inst. Source: Digital Magic Software - EKI Prep Course Unit: DML1 Page:	Introduction to Digital Electronics	Min. Score:	100%
d	()	Y1d	Reading Assignment Source: Digital Magic Guide - EKI Mr. Circuit II Unit: LESSON 2 Page: 4	Logic Circuits	Min. Score:	85%
e	()	Y1e	Computer Aided Inst. Source: Digital Magic Software - EKI Prep Course Unit: DML2 Page:	Logic Circuits	Min. Score:	100%
f	()	Y1f	Job Sheet Source: Preparing the Wired Components Unit: Y1f Page:	Preparing the Wired Components	Min. Score:	100%
g	()	Y1g	Reading Assignment Source: Digital Magic Guide - EKI Mr. Circuit II Unit: LESSON 3 Page: 5	Using the Solderless Circuit Board	Min. Score:	85%
h	()	Y1h	Computer Aided Inst. Source: Digital Magic Software - EKI Prep Course Unit: DML3 Page:	Using the Solderless Circuit Board	Min. Score:	100%

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<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>	
i	()	Y1i	Computer Aided Inst. Source: Digital Magic Software - EKI Prep Course Unit: LPD01	A Logic Indicator Page:	Min. Score: 100%
j	()	Y1j	Exercise Source: Digital Magic Guide - EKI Mr. Circuit II Unit: EXP 1	A Logic Indicator Page: 6 AND 7	Min. Score: 85%
k	()	Y1k	Exercise Source: Digital Magic Guide - EKI Mr. Circuit II	Mr. Circuit II - Inventory Sheet	

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
<u>2</u>	<u>Logic Gates</u>	<u>mm/dd/yy</u> (/ /)	<u>mm/dd/yy</u> (/ /)

The student will demonstrate their knowledge of digital logic gates by constructing AND, OR, NOT, and NOR logic circuits from discrete electronic components. They will demonstrate their skill by completing computer aided instruction lessons and obtaining a perfect score on associated quizzes.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>	
a	()	Y2a	Computer Aided Inst. Source: Digital Magic Software - EKI Prep Course Unit: LPD02	The AND Logic Gate Page:	Min. Score: 100%
b	()	Y2b	Exercise Source: Digital Magic Guide - EKI Mr. Circuit II Unit: EXP 2	The AND Logic Gate Page: 8 AND 9	Min. Score: 85%
c	()	Y2c	Computer Aided Inst. Source: Digital Magic Software - EKI Prep Course Unit: LPD03	The OR Logic Gate Page:	Min. Score: 100%
d	()	Y2d	Exercise Source: Digital Magic Guide - EKI Mr. Circuit II Unit: EXP 3	The OR Logic Gate Page: 10 AND 11	Min. Score: 85%
e	()	Y2e	Computer Aided Inst. Source: Digital Magic Software - EKI Prep Course Unit: LPD04	The NOT (Inverter) and YES Circuits Page:	Min. Score: 100%
f	()	Y2f	Exercise Source: Digital Magic Guide - EKI Mr. Circuit II Unit: EXP 4	The NOT (Inverter) and YES Cicruits Page: 12 AND 13	Min. Score: 85%
g	()	Y2g	Computer Aided Inst. Source: Digital Magic Software - EKI Prep Course Unit: LPD05	The NOR Logic Gate Page:	Min. Score: 100%
h	()	Y2h	Exercise Source: Digital Magic Guide - EKI Mr. Circuit II Unit: EXP 5	The NOR Logic Gate Page: 14 AND 15	Min. Score: 85%

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<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>		
b	()	Y5b	Exercise Source: Digital Magic Unit: EXP 14	The Seven-Segment Display Guide - EKI Mr. Circuit II Page: 36 AND 37	Min. Score:	85%
c	()	Y5c	Computer Aided Inst. Source: Digital Magic Unit: LPD15	The Seven-Segment Decoder Software - EKI Prep Course Page:	Min. Score:	100%
d	()	Y5d	Exercise Source: Digital Magic Unit: EXP 15	The Seven-Segment Decoder Guide - EKI Mr. Circuit II Page: 38 AND 39	Min. Score:	85%
e	()	Y5e	Computer Aided Inst. Source: Digital Magic Unit: LPD16	A Digital Counter with Display Software - EKI Prep Course Page:	Min. Score:	100%
f	()	Y5f	Exercise Source: Digital Magic Unit: EXP 16	A Digital Counter with Display Guide - EKI Mr. Circuit II Page: 40 AND 41	Min. Score:	85%
g	()	Y5g	Computer Aided Inst. Source: Digital Magic Unit: LPD17	An Up/Down Counter with Display Software - EKI Prep Course Page:	Min. Score:	100%
h	()	Y5h	Exercise Source: Digital Magic Unit: EXP 17	An Up/Down Counter with Display Guide - EKI Mr. Circuit II Page: 42 AND 43	Min. Score:	85%
i	()	Y5i	Computer Aided Inst. Source: Digital Magic Unit: LPD18	The Multiplexer/Demultiplexer Software - EKI Prep Course Page:	Min. Score:	100%
j	()	Y5j	Exercise Source: Digital Magic Unit: EXP 18	The Multiplexer/Demultiplexer Guide - EKI Mr. Circuit II Page: 44 AND 45	Min. Score:	85%

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
6	Pulse and Pulse-Train Generators	mm/dd/yy (/ /)	mm/dd/yy (/ /)

The student will build circuits that demonstrate how the 555 Timer IC can be used as a multivibrator to generate pulses and pulse-trains. The student will demonstrate their skill by completing computer aided instruction lessons and obtaining a perfect score on the associated quizzes.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>		
a	()	Y6a	Computer Aided Inst. Source: Digital Magic Unit: PPD20	A Logic Probe Software - EKI Prep Course Page:	Min. Score:	100%
b	()	Y6b	Exercise Source: Digital Magic Unit: EXP 20	A Logic Probe Guide - EKI Mr. Circuit II Page: 48 AND 49	Min. Score:	85%

Lastname, First

Student Number

Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>	
c	()	Y6c	Computer Aided Inst. Source: Digital Magic Software - EKI Prep Course Unit: PPD21	A One-Shot Touch Generator	Min. Score: 100%
d	()	Y6d	Exercise Source: Digital Magic Guide - EKI Mr. Circuit II Unit: EXP 21	A One-Shot Touch Generator Page: 50 AND 51	Min. Score: 85%
e	()	Y6e	Computer Aided Inst. Source: Digital Magic Software - EKI Prep Course Unit: PPD22	A Pulse Train Generator	Min. Score: 100%
f	()	Y6f	Exercise Source: Digital Magic Guide - EKI Mr. Circuit II Unit: EXP 22	A Pulse Train Generator Page: 52 AND 53	Min. Score: 85%

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u> mm/dd/yy (/ /)	<u>Completed</u> mm/dd/yy (/ /)
7	Combinational Digital Circuits		

The student will construct circuits incorporating pulse generators, logic gates, counters, decoders, and displays that perform various functions. They will demonstrate their skill by completing computer aided instruction lessons and obtaining a perfect score on the associated quizzes.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>	
a	()	Y7a	Computer Aided Inst. Source: Digital Magic Software - EKI Prep Course Unit: PPD24	A Double Decision Maker	Min. Score: 100%
b	()	Y7b	Exercise Source: Digital Magic Guide - EKI Mr. Circuit II Unit: EXP 23	A Double Decision Maker Page: 54 AND 55	Min. Score: 85%
c	()	Y7c	Computer Aided Inst. Source: Digital Magic Software - EKI Prep Course Unit: PPD28	A Photo-Electric Digital Lap Counter	Min. Score: 100%
d	()	Y7d	Exercise Source: Digital Magic Guide - EKI Mr. Circuit II Unit: EXP 28	A Photo-Electric Digital Lap Counter Page: 64 AND 65	Min. Score: 85%
e	()	Y7e	Computer Aided Inst. Source: Digital Magic Software - EKI Prep Course Unit: PPD29	A Random Number Generator	Min. Score: 100%
f	()	Y7f	Exercise Source: Digital Magic Guide - EKI Mr. Circuit II Unit: EXP 29	A Random Number Generator Page: 66 AND 67	Min. Score: 85%
g	()	Y7g	Computer Aided Inst. Source: Digital Magic Software - EKI Prep Course Unit: PPD30	A Digital Die	Min. Score: 100%

Lastname, First

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Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>	
h	()	Y7h	Exercise	A Digital Die	
			Source:	Digital Magic Guide - EKI Mr. Circuit II	
			Unit:	EXP 30	
				Page: 68 AND 69	Min. Score: 85%

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Frank C. Pendzich**

ASSIGNMENT CHECK-LIST

Generated: 09/05/02

Course # Course Title
VEE401 **Digital Electronics II**

Area Competency Category
Z **DIGITAL ELECTRONIC PROJECT DESIGN AND CONSTRUCTION**
VOCATIONAL

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
1	Electronic Project Design/Construction (Theory)	<u>mm/dd/yy</u> (/ /)	<u>mm/dd/yy</u> (/ /)

The student will be able to answer questions regarding the construction of a digital electronic project. They should be aware of the different manufacturing tools and processes necessary to produce an electronic project. They will select a digital circuit construction project and develop an itemized bill of materials to be purchased from a local source. The bill of materials will include the Project's Title, the Vendor's Name and Address, Part Description, Part Number, Item's Price, Quantity, Cost, and Total Cost for producing one, five, and ten copies of the project.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>	<u>Min. Score</u>
a	()	Z1a	Reading Assignment Source: How To Build Electronic Projects Unit: 6	Project Layout and Circuit Board Const. Page: 72-91	85%
b	()	Z1b	Reading Assignment Source: How To Make Printed Circuit Boards Unit: 5	Photo Layout Procedures Page: 49-64	85%
c	()	Z1c	Written Report	Bill of Materials	
d	()	Z1d	Notebook	Notebook Review	
e	()	Z1e	Computer Test	Electronic Project Design/Construction	

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
2	Breadboard Prototyping	<u>mm/dd/yy</u> (/ /)	<u>mm/dd/yy</u> (/ /)

The student will breadboard their electronic project using any breadboarding technique. The project must work in the breadboarded state before the project can be constructed using a printed circuit board.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	Z2a	Computer Aided Inst. Source: Electronics Discovery CAI Software - EKI	Using the Solderless Circuit Board

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Period

Subtasks are to be initialled by the instructor as they are completed. Indicate the task start and completion dates. Submit this form when each task is done.

			Unit: 3	Page:	Min. Score: 85%
Sub	Init	Code	Type of Task	Task Description	
b	()	Z2b	Lab Experiment	Using the Solderless Circuit Board	
			Source: Electronics Discovery Guide - EKI (Mr. Circuit I)		
			Unit: LESSON 3	Page: 8 AND 9	Min. Score: 85%
c	()	Z2c	Project	Breadboarded Electronic Project	

Task	Task/Skill	Started	Completed
3	Wire-Wrap Prototyping	<u>mm/dd/yy</u> (/ /)	<u>mm/dd/yy</u> (/ /)

The student will wire-wrap their electronic project. The project must work in the wire-wrapped state before it can be constructed on a printed circuit board.

Sub	Init	Code	Type of Task	Task Description
a	()	Z3a	Project	Wire-Wrapped Electronic Project

Task	Task/Skill	Started	Completed
4	PCB Artwork Preparation	<u>mm/dd/yy</u> (/ /)	<u>mm/dd/yy</u> (/ /)

The student will produce a photopositive printed circuit board artwork for their electronic project using the photographic layout process. This process includes the use of self adhesive trace tape and pads to make the pattern. The PCB artwork design must contain no defects.

Sub	Init	Code	Type of Task	Task Description
a	()	Z4a	Project	Photopositive PCB Artwork

Task	Task/Skill	Started	Completed
5	Electronic Computer Automated Design (CADD)	<u>mm/dd/yy</u> (/ /)	<u>mm/dd/yy</u> (/ /)

The student will draft the schematic and PCB board pattern using either Wintek's HIWire or SmartWork software. The student will then produce a photopositive of the artwork for manufacturing their project's printed circuit board.

Sub	Init	Code	Type of Task	Task Description
a	()	Z5a	Project	CADD Electronic Project - Schematic
b	()	Z5b	Project	CADD Electronic Project - PCB Artwork

Task	Task/Skill	Started	Completed
6	Printed Circuit Board (PCB) Manufacturing	<u>mm/dd/yy</u> (/ /)	<u>mm/dd/yy</u> (/ /)

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Period

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The student will expose, develop, etch, and final process their project's printed circuit board.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	Z6a	Project	Expose the Printed Circuit Board
b	()	Z6b	Project	Develop the Printed Circuit Board
c	()	Z6c	Project	Etch the Printed Circuit Board
d	()	Z6d	Project	Post Process the Printed Circuit Board

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
		<u>mm/dd/yy</u>	<u>mm/dd/yy</u>
7	Component Installation	(/ /)	(/ /)

The student will properly install and solder all the components of their electronic project.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	Z7a	Project	Component Installation and Soldering

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
		<u>mm/dd/yy</u>	<u>mm/dd/yy</u>
8	Chassis Design and Construction	(/ /)	(/ /)

The student will design and construct a chassis to mount their electronic project in. The case must completely enclose the electronic project.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	Z8a	Project	Electronic Project Chassis Design
b	()	Z8b	Project	Electronic Project Chassis Construction
c	()	Z8c	Project	Electronic Project Installation

 Lastname, First

 Student Number

 Period

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<u>Task</u> 9	<u>Task/Skill</u> Technical Display	<u>Started</u> <u>mm/dd/yy</u> (/ /)	<u>Completed</u> <u>mm/dd/yy</u> (/ /)
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The student will develop a technical display for the project reflecting the process in which it was made and how it operates. The display will include the schematic drawing, PCB artwork, itemized parts list, theory of operation and application, and operating instructions. All components of the display must be the student's work and should be composed using computer technology. Finally, the student will present an oral report to the class about the project.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	()	Z9a	Project	Display - Schematic Diagram
b	()	Z9b	Project	Display - PCB Artwork
c	()	Z9c	Project	Display - Itemized Parts List
d	()	Z9d	Project	Display - Theory of Operation
e	()	Z9e	Project	Display - Application to Technology
f	()	Z9f	Project	Display - Operating Instructions
g	()	Z9g	Oral Report	Electronic Project Design/Construction

 Lastname, First

 Student Number

 Period

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