

Introduction to Engineering

Course/Class Description: Introduction to Engineering - NE Course code 100163

Month	NE State Standard/Benchmark (all standards and "sub-standards"/indicators must be accounted for) Bold all standards assessed on NeSA	Learning Activities	Evaluation Techniques	Resources (Specific textbook chapters, website, videos, activities, novels, etc.)	Ne Academic Standards (non-core areas)
Aug.	SC 12.1.3 , LA 12.1.6 , LA 12.3.2, LA 12.2.2	Lecture, activities, video	HW, class response	JSF video, Team building exercises	1.1, 1.2
Sep.	LA 12.2.2, SC 12.1.3 , LA 12.1.6 , LA 12.3.1, LA 12.4.1, LA 12.3.3	Lecture, design project	HW, quiz, design project	Mousetrap Car design project, Ping Pong Packer design project	1.1, 1.2, 1.4, 1.5, 2.1, 3.1
Oct.		Design project	Worksheets, design project	Ping Pong Packer project, West Point Bridge Design program and project	1.1, 1.2, 1.4, 1.5, 2.1, 2.2, 2.3
Nov.	LA 12.1.6, LA 12.3.2, SC 12.1.3 , LA 12.2.2, LA 12.2.1, LA 12.3.1, LA 12.4.1, LA 12.3.3, LA 12.1.5 , MA 12.2.4	Activities, design project	Design project, quiz, worksheets	PPT on project management, case studies, impromptu designs, NASA shoebox glider competition	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 4.1, 5.3, 7.1, 8.1, 8.2
Dec.		Design project, presentations	Design project, videos, presentation to NASA	NASA shoebox glider competition	
Jan.					
Feb.					
Mar.					
Apr.					
May					

CAD

Course/Class Description: CAD – Computer Aided Design Course codes 100140 & 100141
 Textbooks referenced: 1) Fundamentals of Graphic Communication 2005, 2) Beginner's Guide to SolidWorks 2008, 3) Engineering Design with SolidWorks 2008, 4) Architecture- residential drawing and design 1995.

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Aug.					
Sep.					
Oct.					
Nov.					
Dec.					
Jan.	LA 12.2.1f, LA 12.2.2a	Lecture, activities, demos	HW, class exercises, projects	Software tutorials, Textbook 1) Ch 2-5, 9 2) Pg3-52. orthographic/isometric handouts, dimensioning handouts	Course 100140 1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2
Feb.	LA 12.2.1f, MA 12.1.3a, MA 12.2.4a, MA 12.2.4b	Lecture, activities, demos	HW, class exercises, projects	Textbook 1) Ch 6, 8, 9 auxiliary & section projects	Course 100140 4.1, 5.1, 5.2, 5.6, 5.7
Mar.	LA 12.2.1f, LA 12.3.2, LA 12.1.6k	Lecture, activities, demos	Class exercises, projects	Textbook 1) Ch 10, assembly handout	Course 100140 5.6, 5.7, 5.8, 5.9
Apr. May	LA 12.2.1f, LA 12.1.5e, MA 12.3.1f, MA 12.2.4b	Lecture, activities, demos	Class exercises, projects	Handouts, PPT & Prezi on space allocation, windows, doors, stairs, roofs	Course 100141 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.4, 2.5, 2.6, 3.1, 4.1, 5.1

PHYSICS

Course/Class Description: Physics

Text: Holt Physics, Serway and Faughn, Holt, Rinehart, and Winston, 2002

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Aug.	Science 12.1.1 , 12.1.2, 12.2.2	Lecture, activities, demos, labs	HW, labs, class response	Ch 1, Ch 2-1, 2-2, TI-83 & CBR Activity, Webquest	
Sep.	Science 12.1.1 , 12.1.2, 12.2.2	Lecture, activities, demos, labs	HW, labs, class response, test	Ch 2-3, Ch 3-1, Handout on Projectile Motion & Satellites, Webquest, Hang Time Lab, Vector Labs, Science of NFL Football, Stomp Rockets	
Oct.	Science 12.1.1 , 12.1.2, 12.2.2	Lecture, activities, demos, labs	HW, labs, class response, video production, test	Ch 3-4, Video production, Ch 4-1, 4-2, 4-3, "22 Seconds" article	
Nov.	Science 12.1.1 , 12.1.2, 12.2.2 , 12.2.3	Lecture, activities, demos, labs	HW, labs, class response	Ch 4-4, Ch 5-1, Ch 5-2	
Dec.	Science 12.1.1 , 12.1.2, 12.2.2 , 12.2.3	Lecture, activities, demos, labs	HW, labs, class response, test	Ch 5-3, 5-4, Cons of Energy Lab, Horsepower Lab	

Jan.	Science 12.1.1, 12.1.2, 12.2.2	Lecture, activities, demos, labs	HW, labs, class response, test	Science Fair, Ch 6-1, 6-2, 6-3 Bungee Jumping Barbie Lab, Collision Lab	
Feb.	Science 12.1.1, 12.1.2, 12.2.2	Lecture, activities, demos, labs	HW, labs, class response, test	Science Fair, Ch 17-1, 17-2, 17-3	
Mar.	Science 12.1.1, 12.1.2, 12.2.2	Lecture, activities, demos, labs	HW, labs, class response, test	Science Fair, Ch 19-1, 19-2, 19-3, Ohm's Law Lab	
Apr.	Science 12.1.1, 12.1.2, 12.2.2	Lecture, activities, demos, labs	HW, labs, class response, test	Ch 20-1, 20-2, 20-3, Ohm Zone Lab, Switches Lab	
May	Science 12.1.1, 12.1.2, 12.2.2, 12.2.3	Lecture, activities, demos, labs	HW, labs, class response, test	Ch 14 & Ch 15 if time, Reflection Lab, Brightness Lab, $E = mc^2$ video	

MATH 7

Course/Class Description: 7th grade math
 Textbook: Prentice Hall Mathematics: Course 2, Pearson Prentice Hall, 2004.

Month	NE State Standard/Benchmark (all standards and "sub-standards"/indicators must be accounted for) Bold all standards assessed on NeSA	Learning Activities	Evaluation Techniques	Resources (Specific textbook chapters, website, videos, activities, novels, etc.)	Ne Academic Standards (non-core areas)
Aug.	7.1.1, 7.1.2	Lecture, examples, games	HW, class response	Ch 1-2, 4-2, 1-3, 3-8, 4-3, 4-4, 3-6, 3-9	
Sep.	7.1.1, 7.1.2, 7.1.3, 7.1.4	Lecture, examples, games	HW, class response, test	Ch 6-1, 6-2, 6-3, 3-3, 3-4, 1-1, 4-1, 3-2, 6-5, 6-7	
Oct.	7.1.1, 7.1.2, 7.1.3, 7.1.4	Lecture, examples, games	HW, class response, test	Ch 6-8, 1-6, 1-7, 1-8, 1-9, 3-1	
Nov.	7.1.2, 7.1.3 , 7.2.1, 7.2.4, 7.2.5	Lecture, examples, games	HW, class response, test	Ch 7-1, 7-2, 7-3, 7-4, 7-7	
Dec.	7.2.4, 7.2.5	Lecture, examples, games	HW, class response, test	4-8, 1-4, 4-9, 8-1, 8-2, 8-3, 8-4	
Jan.	7.2.5, 7.2.2, 7.2.3	Lecture, examples, games	HW, class response, test	8-7, 8-8, 10-1, 10-6, 10-7, 10-8	
Feb.	7.3.1, 7.3.2, 7.3.3	Lecture, examples, games	HW, class response, test	2-1, 2-3, 2-4, 2-6, 2-7, 2-8, 2-9, 2-10	
Mar.	7.4.1, 7.4.2	Lecture, examples, games	HW, class response, test	1-10, 11-1, 11-2, 11-3, 11-5, 11-8, 7-9	
Apr.	7.4.3	Lecture, examples, games, prob. labs	HW, class response, test	12-1, 12-2, 12-3, 12-4, 12-5, 12-6, 12-7	
May	7.3.1, 7.3.2, 7.3.3	Lecture, examples, games	HW, class response, labs	Review worksheets, labs & activities	

MATH 8

Course/Class Description: 8th grade math
 Textbook: Prentice Hall Mathematics: Course 3, Pearson Prentice Hall, 2004.

Month	NE State Standard/Benchmark (all standards and "sub-standards"/indicators must be accounted for) Bold all standards assessed on NeSA	Learning Activities	Evaluation Techniques	Resources (Specific textbook chapters, website, videos, activities, novels, etc.)	Ne Academic Standards (non-core areas)
Aug.	8.1.2, 8.1.3	Lecture, examples, games	HW, class response	Ch 1-3, 1-4, 1-5, 1-8, 4-5	
Sep.	8.1.1, 8.1.2, 8.1.3, 8.1.4	Lecture, examples, games	HW, class response, test	Ch 4-8, 4-3, 1-7, 7-1, 7-3, 5-1, 5-4	
Oct.	8.2.4, 8.2.5	Lecture, examples, games	HW, class response, lab, test	Ch 8-7, 8-8, 9-1, 9-3, 9-4, 9-5, 9-6, 9-7	
Nov.	8.2.1, 8.2.3, 8.2.4, 8.2.5,	Lecture, examples, games	HW, class response, test	Unit Conversion worksheets, Ch 5-2, 8-1, 8-2, 8-5, 8-6	
Dec.	8.2.1, 8.2.2, 8.2.5	Lecture, examples, games	HW, class response, test	Ch 9-2, 5-5, 5-6, 5-7, 5-8, 8-3, 4-9	
Jan.	8.3.1, 8.3.3	Lecture, examples, games	HW, class response, test	Ch 1-1, 1-7, 2-1, 2-2, 2-3, 2-4, 2-6, 2-7, 2-8	
Feb.	8.3.1, 8.3.2, 8.2.2	Lecture, examples, games	HW, class response, test	Ch 3-1, 3-2, 3-3, 3-4, 3-5, 3-6	
Mar.	8.4.1, 8.4.2	Lecture, examples, games	HW, class response, test	Ch 1-6, 10-1, 10-2, 10-3, 10-4, 10-5, 10-6, 10-7	
Apr.	8.4.3	Lecture, examples, games	HW, class response, labs, test	Ch 11-1, 11-2, 11-4, 11-5	
May	8.3.1, 8.3.2	Lecture, lab, review activities	HW, class response,	Math application activities & worksheets	

ALGEBRA A

Course/Class Description: Freshmen Algebra class (Year 1 of 2 year track)
 Text: Prentice Hall Mathematics Algebra I, Pearson Prentice Hall, 2007

Month	NE State Standard/Benchmark (all standards and "sub-standards"/indicators must be accounted for) Bold all standards assessed on NeSA	Learning Activities	Evaluation Techniques	Resources (Specific textbook chapters, website, videos, activities, novels, etc.)	Ne Academic Standards (non-core areas)
Aug.	12.1.1, 12.1.2, 12.1.3, 12.1.4, 12.3.1, 12.3.2	Lecture, examples, student work at board	HW, class response	Ch 1-1, 1-2, 1-3, 1-4, 1-5 & review worksheets	
Sep.	12.1.1, 12.1.2, 12.1.3, 12.1.4, 12.4.1, 12.4.2, 12.3.1, 12.3.2	Lecture, examples, student work at board	HW, class response, test	Ch 1-6, 2-1, 2-2, 2-3, 2-4, 2-5, & review worksheets	
Oct.	12.1.1, 12.1.2, 12.1.3, 12.1.4, 12.3.1, 12.3.2	Lecture, examples, student work at board	HW, class response, test	Ch 3-1, 3-2, 3-3, & review worksheets	
Nov.	12.3.1, 12.3.2	Lecture, examples, student work at board	HW, class response, test	Ch 3-4, 5-1, 5-2 & review worksheets	
Dec.	12.3.1, 12.3.2, 12.3.3	Lecture, examples, student work at board	HW, class response	Ch 5-3, function worksheets & graphing	
Jan.	12.3.1, 12.3.2, 12.3.3	Lecture, examples, student work at board	HW, class response, test	Ch 4-1, 4-2, 4-3, 4-4, 4-5, & review worksheets	
Feb.	12.3.1, 12.3.2, 12.3.3	Lecture, examples, student work at board	HW, class response	Ch 6-1, 6-2, 6-3, 6-4, 6-5, 6-6	

Mar.	12.3.1, 12.3.2, 12.3.3	Lecture, examples, student work at board	HW, class response, test	Ch 6-7, 7-1, 7-2, 7-3 & review worksheets	
Apr.	12.3.1, 12.3.2, 12.3.3	Lecture, examples, student work at board	HW, class response, test	Ch 7-4, 7-5, 7-6, & review worksheets	
May	12.4.1, 12.4.2	Lecture, examples, student work at board	HW, class response, quiz	Unit 19 Booklet – Statistics & Probability	

Exploring with Technology

Course/Class Description: Exploring with Technology – NE Course Code 103194

Month	NE State Standard/Benchmark (all standards and "sub-standards"/indicators must be accounted for) Bold all standards assessed on NeSA	Learning Activities	Evaluation Techniques	Resources (Specific textbook chapters, website, videos, activities, novels, etc.)	Ne Academic Standards (non-core areas)
Aug.	SC 8.1.1, SC 8.1.3, SC 8.2.2, MA 7.1.3, MA 8.1.3, MA 8.4.2, LA 8.1.6, LA 8.2.1	Discussions, demos	Worksheets, news articles	NXT Legos kit, Mindstorms software	1.3.1, 2.1.1, 4.1.1, 4.2.1
Sep.	SC 8.1.1, SC 8.1.3, SC 8.2.2, MA 7.1.3, MA 8.1.3, MA 8.4.2, LA 8.1.6, LA 8.2.1	Discussions, design projects	Worksheets, news articles, robot building	NXT Legos, Mindstorms software, Tutorials	1.3.1, 1.3.2, 1.3.3, 2.1.1, 2.1.2, 2.2.1, 4.1.1, 4.2.1, 4.2.3
Oct.	SC 8.1.1, SC 8.1.3, SC 8.2.2, MA 7.1.3, MA 8.1.3, MA 8.4.2, LA 8.1.6, LA 8.2.1	Discussions, design projects	Worksheets, news articles, robot building	NXT Legos, Mindstorms software, Tutorials and design projects	Above and 2.2.2, 2.2.3, 4.1.2, 4.2.2, 4.3.1, 4.3.2, 5.2.1, 5.2.2
Nov.	SC 8.1.1, SC 8.1.3, SC 8.2.2, MA 7.1.3, MA 8.1.3, MA 8.4.2, LA 8.1.6, LA 8.2.1	Discussions, design projects	Worksheets, news articles, design projects	NXT Legos, Mindstorms software, Design projects	5.2.2
Dec.	SC 8.1.1, SC 8.1.3, SC 8.2.2, MA 7.1.3, MA 8.1.3, MA 8.4.2, LA 8.1.6, LA 8.2.1	Discussions, design projects	Worksheets, news articles, design projects	NXT Legos, Mindstorms software, Design projects	Above and 5.3.1, 5.3.2, 5.3.3

Designing with Technology

Course/Class Description: Designing with Technology – NE Course Code 100160
 Textbook: Technology Interactions 2007

Month	NE State Standard/Benchmark (all standards and "sub-standards"/indicators must be accounted for) Bold all standards assessed on NeSA	Learning Activities	Evaluation Techniques	Resources (Specific textbook chapters, website, videos, activities, novels, etc.)	Ne Academic Standards (non-core areas)
Aug.	MA 12.2.5 , SC 12.1.3 , SC 12.2.2 , SC 12.2.1	Lecture, demos, Webquest, Labs	HW, class response, labs, news articles	Ch 14, study guide, webquest @ physics.homestead.com, labs	2.6, 2.2.4, 2.3
Sep.		Lecture, demos, labs	HW, class response, labs Test, news articles	Ch 14 Study guide, labs	2.2.1, 2.2.4, 2.3, 2.6.1, 2.6.2
Oct.	MA 12.1.3 , MA12.2.5 , SC 12.1.3 , SC 12.2.2	Lecture, demos, research of example robots	HW, class response, design project News articles	Ch 16 study guide, hydraulic arm robot	10.1.1, 10.1.2, 10.2.1, 10.3.1, 10.4.1, 10.4.2
Nov.	SC 12.1.3 , SC 12.2.2 , MA 12.2.4 , MA12.2.5 ,	Lecture, demos, PPT	HW, class response, design project	Gears WS #1-9, Car design project	1.1.2, 1.4.1, 1.4.2, 1.5.1, 1.5.2, 1.6
Dec.	SC 12.1.3 , LA 12.1.6 , LA 12.4.1	Lecture, PPT, videos, demos	HW, class project, design project presentation	Ch 5, study guide, nanobot design project, rapid prototyping video	4.5, 6.5, 9.1, 9.2, 9.5.2, 6.4.2

Jan.	LA 12.1.6, SC 12.1.3, SC 12.2.2	Lecture, demos	Building & programming projects, WS	NXT Legos kit, Mindstorms software, design project worksheets	4.2, 4.2.4, 4.4.1, 9.1.1, 9.2.1, 9.2.2, 9.3.1
Feb.	LA 12.1.6, SC 12.1.3, SC 12.2.2	Lecture, demos	Building & programming projects, WS	NXT Legos kit, Mindstorms software, design project worksheets	4.2, 4.2.4, 4.4.1, 9.1.1, 9.2.1, 9.2.2, 9.3.1, 9.4.2, 9.4.3
Mar.	SC 12.1.3, SC 12.2.2	Lecture, research, example videos	Project participation, video production	Ch 13, study guide, sample stop motion animation videos YouTube, iPad	4.1, 4.2.4, 11.4
Apr.	SC 12.1.3, SC 12.2.2	Lecture, research, example videos	Project participation, Rube Goldberg Machine	Rube Goldberg worksheets and videos on YouTube	4.2, 4.2.4, 4.4.1, 9.1.1, 9.2.1, 9.2.2, 9.3.1, 9.4.2, 9.4.3
May	LA 12.1.6, LA 12.2.1, LA 12.2.2, LA 12.3 LA 12.4.1, SC 12.1.3, SC 12.2.2	Discussions, research	Final project paper and presentation	Final paper and presentation on new technologies handout	1.2.1, 1.3, 4.1, 4.4, 4.5,