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**Lean Production** 3 Credits **IE 235 Spring 2022** 

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II, PE

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Office

**Information:** 

**Tech 323** 

**Home or Cell:** 

N/A

Class Location: Tech Building 322

Meeting Times: Friday 8:00 AM – 11:00 AM

## **Required Materials:**

Text: Lean Production Simplified, Dennis, 3rd Ed. ISBN:13:978-1-4987-0887-6 (Price

\$XXX.00)

**Tools:** Jump drive. Lab Fee: None

**Course Description:** This course will introduce the student to variations of the Toyota Production System as it is used in industry and business to improve efficiency and to build a problem solving culture in an organization. Topics will include: 5S, Value Stream Mapping, SMED, Kanban, Takt Time, Process At A glance and organizational culture change. Course will also compare other manufacturing philosophies and systems for manufacturing and production. Prerequisite: None.

#### **Course Objectives:**

- Students will be able to discuss different manufacturing philosophies and 1) understand when their application would be useful.
- Students will be able to calculate Takt Time and understand it's use in a 2) manufacturing or administrative environment.
- 3) Students will be able to understand how to apply 5S.
- 4) Students will be able to describe how to use Lean methods to reduce cost, increase product quality and to reduce lead time.
- 5) Students will be able to apply the methodologies of SMED, TPM, JIT, Poke Yoke and Jidoka.

6) Students will understand basic techniques of facilitating Kaizen events and how they are used.

COURSE OUTCOMES	COURSE MEASUREMENTS
2a Identifies requirements on the design problem	
2c Identifies the environmental, cultural and	
social issues involved in an engineering	
solution and incorporates that sensitivity into	
the design process with consideration of	
public health, safety and welfare as well as	
global, cultural, social and environmental	
factors	Assessment will be by problems presented
4b Evaluates alternative engineering solutions or	in homework, quizzes, tests & project.
scenarios taking into consideration global,	
economic, environmental and societal contexts	

# **Grading Plan:**

Homework	20%
Attendance & participation	10%
Weekly quizzes	20%
Midterm	20%
Final	20%
Project	10%
Total	100%
Portfolio (Extra Credit)	+%

(A) 90-100; (B) 80-89; (C) 70-79; (D) 60-69; (F) 0-59

Grading Notes: Homework will be assigned weekly and graded on a scale of 1-10. The top ten scoring homework assignments as turned in by the student will be used in calculating final grade. Homework is due one week after assignment for full credit, may still be turned in the next week for 75% credit and no credit thereafter. Homework will always be computer print outs except if a handout is given as an assignment. Weekly quizzes will be given at the beginning of the second class of the week and graded on a scale of 1-10. The top ten quiz grades will be used in calculating final grades. Students who miss quizzes or tests will not be allowed a makeup (unless a legitimate written excuse is provided) and Midterm and Final grades will be curved according to raising the highest objective grade in class to a '100' with all other student grades raised by the same number of points only if there are six or more students in the class. Attendance & participation will be graded based on the student's arrival on time (only five minutes 2/7/2022 Page 2 of 5

leeway is allowed) and further predicated on a student's questions (two required per class period). **Students with two unexcused absences are subject to being dropped**. Projects must be completed to pass the class; those not finishing and presenting class projects will be given an incomplete.

# **Grading Policy**

Students must do their own work. Cheating and plagiarism are strictly forbidden. Cheating includes (but is not limited to) plagiarism, submission of work that is not one's own, submission or use of falsified data, unauthorized access to exams or assignments, use of unauthorized material during an exam, or supplying or communicating unauthorized information for assignments or exams.

#### **Participation**

Students are expected to attend and participate in all class activities. Points will be given to students who actively participate in class activities including guest speakers, field trips, laboratories, and all other classroom events.

### Cell phone and headphone use

Please turn cell phones off **before** coming to class. Cell phone courtesy is essential to quality classroom learning. Headphones must be removed before coming to class.

## **Attendance Policy**

Students are expected to attend all class sessions. A percentage of the student's grade will be based on class attendance and participation. Absence from class, regardless of the reason, does not relieve the student of responsibility to complete all course work by required deadlines. Furthermore, it is the student's responsibility to obtain notes, handouts, and any other information covered when absent from class and to arrange to make up any in-class assignments or tests if permitted by the instructor. Incomplete or missing assignments will necessarily affect the student's grades. Instructors will report excessive and/or unexplained absences to the Counseling Department for investigation and potential intervention. Instructors may drop students from the class after three (3) absences unless prior arrangements are made with the instructor to make up work and the instructor deems any excuse acceptable.

Study Time Outside of Class for Face-to-Face Courses For every credit hour in class, a student is expected to spend two hours outside of class studying course materials.

Study Time for Hybrid or Blended Courses For a hybrid or blended course of one credit hour, a student is expected to spend three hours per week studying course materials.

## **Study Time for Online Courses**

For an online course of one credit hour, a student is expected to spend four hours per week studying course materials.

#### **Academic Integrity**

Integrity (honesty) is expected of every student in all academic work and every engineer and scientist working professionally. The guiding principle of academic integrity is that a student's submitted work must be the student's own. Students who engage in academic dishonesty diminish their education and bring discredit to the University community. Avoid situations likely to compromise academic integrity such as: cheating, facilitating academic dishonesty, and plagiarism or modifying academic work to obtain additional credit in the same class unless approved in advance by the instructor. Failure to observe rules of academic integrity established by the instructor may result in expulsion. The use of another person's ideas or work claimed as your own without acknowledging the original source is known as plagiarism and is prohibited. Students may be expelled for any dishonesty.

## Diné Philosophy of Education

The Diné Philosophy of Education (DPE) is incorporated into every class for students to become aware of and to understand the significance of the four Diné philosophical elements, including its affiliation with the four directions, four sacred mountains, the four set of thought processes and so forth: Nitsáhákees, Nahát'á, Íína and Siih Hasin which are essential and relevant to self-identity, respect and wisdom to achieve career goals successfully.

At NTU's Zuni Campus, the A:shiwi Philosophy of Education offers essential elements for helping students develop Indigenous and Western understandings. Yam de bena: dap haydoshna: akkya hon detsemak a:wannikwa da: hon de:tsemak a:ts'umme. *Our language and ceremonies allow our people to maintain strength and knowledge*. A:shiwi core values of hon i:yyułashik'yanna:wa (respect), hon delank'oha:willa:wa (kindness and empathy), hon i:yyayumoła:wa (honesty and trustworthiness), and hon kohoł lewuna:wediyahnan, wan hon kela i:tsemanna (think critically) are central to attaining strength and knowledge. They help learners develop positive self-identity, respect, kindness, and critical thinking skills to achieve life goals successfully.

#### **Students with Disabilities**

Navajo Technical University is committed to serving all students in a non-discriminatory and accommodating manner. Any student who feels that she or he may need special accommodations should contact the Accommodations Office (<a href="http://www.navajotech.edu/student-services#accomodations-services">http://www.navajotech.edu/student-services#accomodations-services</a>) in accordance with the university's Disability Accommodations Policy (see

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http://www.navajotech.edu/images/about/policiesDocs/Disability Exhibit-A 6-26-2018.pdf). Students who need an accommodation should also contact the Vocational Rehabilitation Counselor, Virginia Edgewater, whose phone number is (505) 387-7396.

#### **Email Address**

Students are required to use NTU's email address for all communications with faculty and staff.