

# **Annual Year End Report**

**AY 2020-21**

## **Department of Industrial Technology Jordan College of Agricultural Sciences and Technology**

### **Faculty and staff members**

1. Dr. A. Alexandrou (Chair)
2. Mr. Don Austin (Teacher Ed)
3. Dr. Nitaigour Prem Mahalik
4. Dr. Arun Nambiar (Graduate Coordinator)
5. Mrs. Debra Pichardo (Department Administrative Assistant)
6. Dr. Balaji Sethuramasamyraja (Precision Ag Minor & UAV & Agricultural Systems Management Coordinator)
7. Dr. Daming Zhang (BSIT Program Assessment Coordinator)

## Table of Contents

Executive Summary	3
1. Accomplishments and Progress on 2018-19 Goals	4
2. Unit Accomplishments	6
3. Publications	12

## Executive Summary

The department of Industrial Technology faced the following three challenges:

- i. **Covid-19.** This health crisis forced the department to deliver all its classes in an online format after mid-March. The challenge was figuring out how to deliver the laboratories in a face-to-face mode so that students will not lose the educational experience that they deserve.
- ii. **Maintenance of the equipment.** Another challenge that the department has faced is the maintenance and repair of its state of the art and obsolete equipment that the department operates and uses for its labs. Currently the department uses a student assistant for simple maintenance tasks but this has not been sufficient. The hiring of an Instructional Technician is the best solution.
- iii. **Renew membership of Advisory Board.** The department is attempting to renew its advisory board members. The department seeks to better balance the board in relation to representatives from food processing, manufacturing and service industries. The renewal process has been interrupted because of the coronavirus closure.

The department of Industrial Technology faced the following three opportunities:

- i. **Food Processing Plant Management option.** The Department is in discussions with the department of Food Science in order to introduce a new option, Food Processing Plant Management. The process has been interrupted because of the coronavirus lockdown.
- ii. **Summer camp.** The department is working on offering a summer camp for high school juniors and seniors. The camp was structured around the citrus packing line. The launch of the recruitment camp has been postponed for next summer.
- iii. **Nut Processing Line.** The department is installing a nut processing line, a gift from a number of private companies under the auspices of WAPA. All components are currently in Wonderful Pistachios in Lost Hills. University facilities management is currently modifying room IT 124 so that the line can be installed. The course will be taught once the line is installed.

## 1. Accomplishments and Progress on 2019-20 Goals

The Department of Industrial Technology (IT) has five tenured faculty, one full-time lecturer, and one ASC. The faculty diligently worked in line with the vision and mission of the Jordan College of Agricultural Sciences and Technology (JCAST) and accomplished the goals and objectives that were set in AY 2019-20.

Table 1. Progress on department goals for 2019-2020.

<b>Goals for current academic year</b>	<b>Progress</b>
Consolidate synergies and collaborations with community colleges;	The department has participated in the Building Pathways for Student Success initiative, a collaborative effort between Jordan College and community colleges to facilitate the success of transfer students to Jordan College. Additionally, the department has participated in the Ag Mechanics/Industrial Technology collaboration forum with community colleges.
Install the nut processing line (WAPA gift) in room IT 124 and introduce a course;	The nut processing line has been installed in room IT 124. The installation is expected to be completed in summer 2021. A course (4 students) was introduced in Spring 2021 and will be offered again in Fall 2021. The instructors are industry representatives.
Open the packing line, nut processing and automation courses to students from other majors;	Efforts continue in recruiting students from other departments, particularly Plant Science, Food Science and Ag Business to recruit students. Covid 19 restrictions delayed the efforts.
Continue recruiting for the Agricultural Systems Management (ASM) option	In progress. The option was introduced in Fall 2017 and had 5 students. In Spring 2021 in had 32 matriculated students. It increased its number of students by about 5 students every semester. Enrollment has grown well above expectations. Dr. Seth is the program's coordinator.
Continue recruiting for the MSc program;	The program faced a challenge due to a decrease in the number of international students. This decrease was related to Covid 19, visas and other issues outside the department's control. The number of graduate students in Spring 2021 stabilized to 20.
Create synergies with Central Valley's commodity groups;	The department with the support of Ag One and the Deans office has initiated discussions with commodity groups to update its curriculum and equipment.
Continue to participate in efforts to create an Agricultural Engineering program at Fresno State (with LCOE)	In progress. The report has been submitted to the Deans of JCAST and LCOE.

Continue to participate in the LCOE's effort to create a minor/certificate on process control and automation	In progress. The department, together with Lyles College of Engineering, has been a recipient of a gift from Chevron to create an Automation Academy. Equipment was purchased and was used in courses in Fall 2019.
Introduce a new option provisionally titled Food Plant Operation Management;	In progress. Efforts were made with Food Science to create an option. Covid 19 delayed the submission of the
Introduce a Summer Camp for HS students;	The summer camp was cancelled due to COVID19.

## 2021-22 goals and objectives

The goals and objectives for the coming academic year are listed below:

- i. Recruit a Instructional Technician who will be able to maintain the state of the art equipment that the department uses;
- ii. Replace Don Austin who retired in June 2021;
- iii. Increase student recruitment efforts;
- iv. Increase efforts to recruit woman;
- v. Consolidate synergies and collaborations with community colleges;
- vi. Finish installing the nut processing line (WAPA gift) in room IT 124 and consolidate the course introduced;
- vii. Open the packing line, nut processing and automation courses to students from other majors;
- iv. Continue recruiting for the Agricultural Systems Management (ASM) option;
- v. Continue recruiting for the MSc program;
- vi. Create synergies with Central Valley's commodity groups;
- vii. Continue to participate in efforts to create an Agricultural Engineering program at Fresno State (with LCOE);
- viii. Continue to use the automation academy equipment for IT accredited courses.
- ix. Introduce a new option provisionally titled Food Plant Operation Management;
- x. Introduce a Summer Camp for HS students.

## **2. Unit accomplishments**

### **2a. Accomplishments**

The following actions took place to expand relationships on and off campus:

- i. Expanded relationships with the College of Engineering that resulted in the using the automation trainer and tabletop robots to IT's articulated classes.
- ii. The department developed its relationship with Western Agricultural Processors Association (WAPA) and a \$500,000 nut processing line is being installed in room IT 124.
- iii. The department (since September 2013) participates in the Valley Industry Partnership program run by LCOE, which provides the students an opportunity to work in a real-world engineering/industrial environment for a year.
- iv. Currently, the department participates in an important project for the agricultural industry called Collection and Analysis of Agricultural Equipment Activity Data. Fresno State is a subcontractor to the Air Resource Board financed project.

Most of the efforts mentioned above resulted in tangible results (gifts) for the department, college and university.

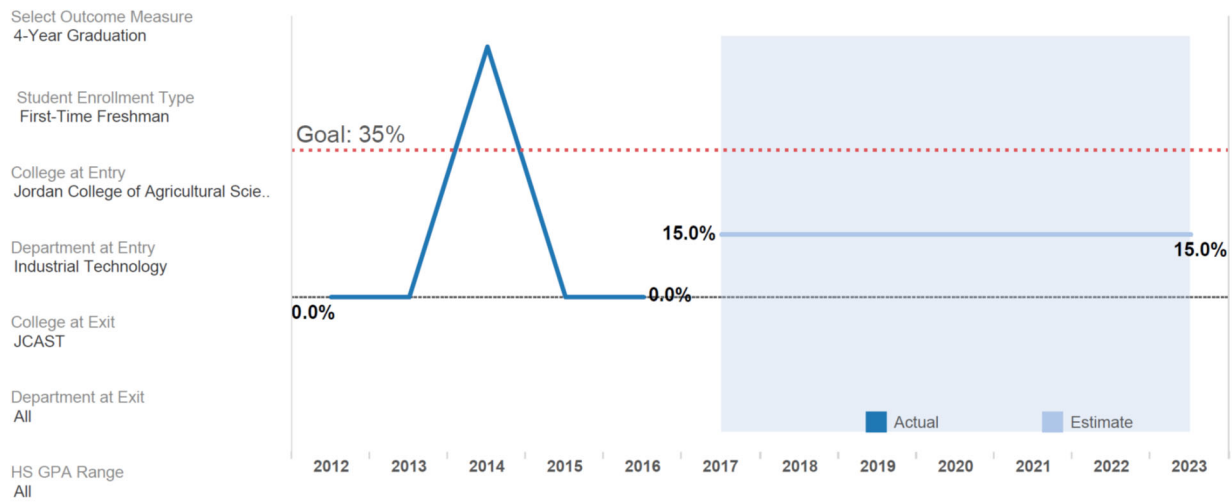
### **2b. Student Success: Graduation Rates, Retention, Closing the Loop**

Student success numbers are small and do not allow for a meaningful comparison.

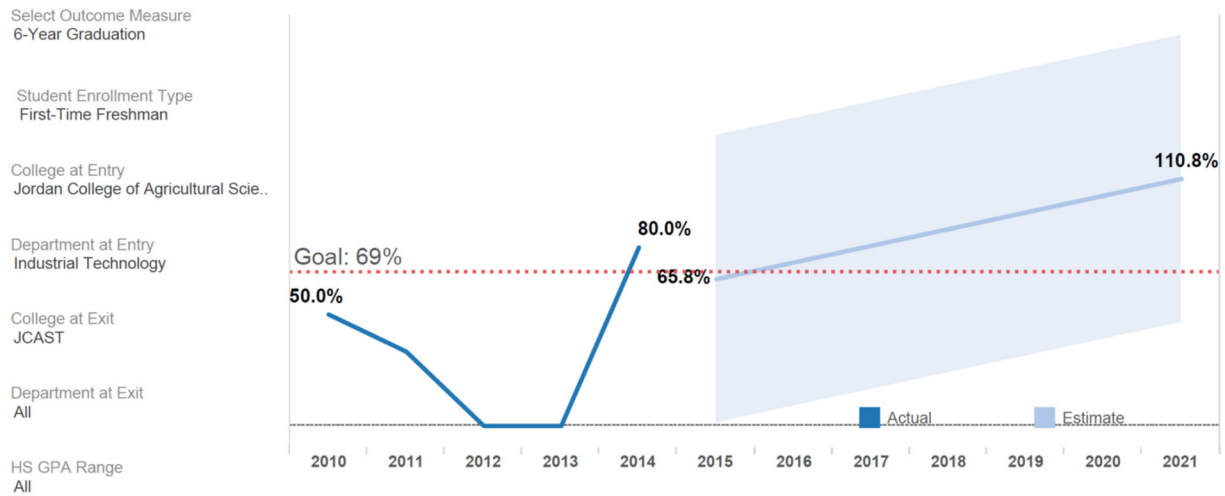
#### **Graduation Rate: First-Time Freshman**

The department's 4<sup>th</sup> year and 6<sup>th</sup> year graduation rates for first-time freshman are shown in the following figures. It should be noted that the IT cohort sizes are very small and do not allow for a meaningful comparison.

**4-Year Graduation of Full-Time, First-Time Freshman Cohorts  
Entry Cohorts from Fall 2012 to Fall 2016  
College at Entry: Jordan College of Agricultural Sciences and Technology**



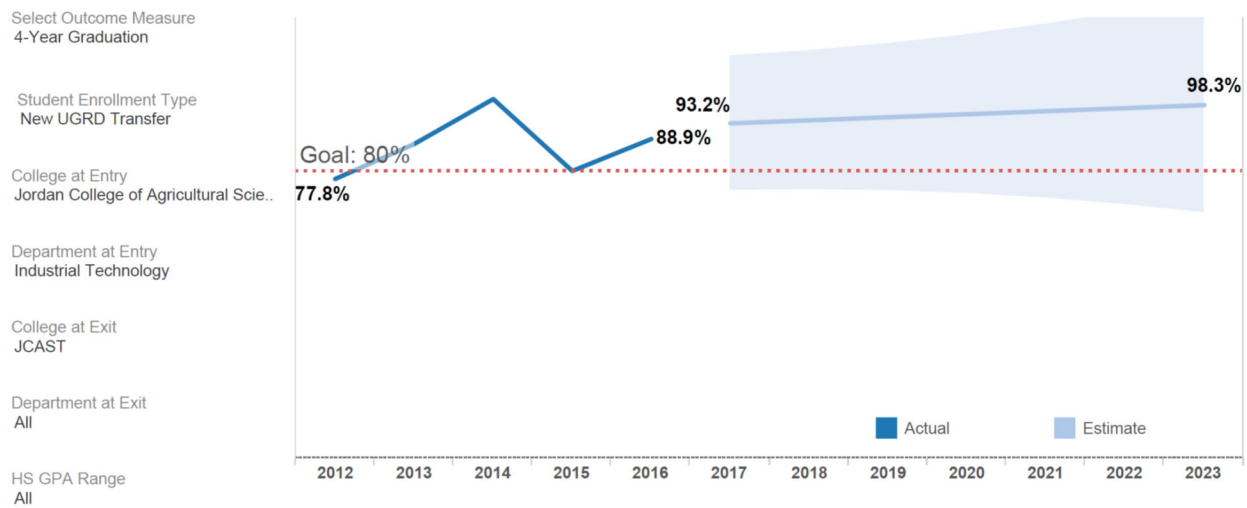
**6-Year Graduation of Full-Time, First-Time Freshman Cohorts  
Entry Cohorts from Fall 2010 to Fall 2014  
College at Entry: Jordan College of Agricultural Sciences and Technology**



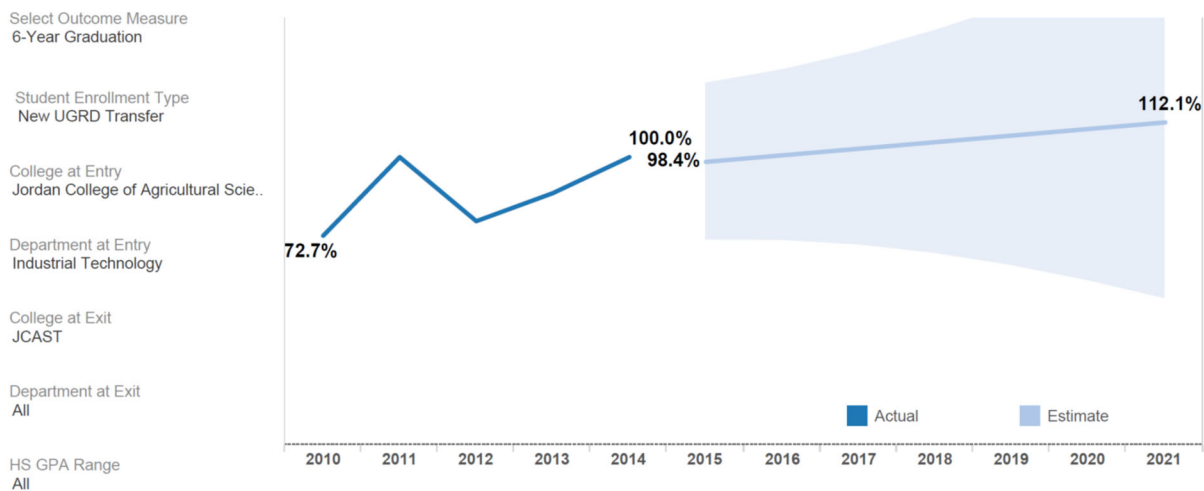
**Graduation Rate: Transfer Students**

The department’s 4<sup>th</sup> and 6<sup>th</sup> year graduation rates for transfer students are shown below. It should be noted that the IT cohort sizes are very small and do not allow for a meaningful comparison. The last few years graduation rate for transfer students has been fluctuating around the 80% system’s target.

**4-Year Graduation of Full-Time & Part-Time, New UGRD Transfer Cohorts  
Entry Cohorts from Fall 2012 to Fall 2016  
College at Entry: Jordan College of Agricultural Sciences and Technology**



**6-Year Graduation of Full-Time & Part-Time, New UGRD Transfer Cohorts  
Entry Cohorts from Fall 2010 to Fall 2014  
College at Entry: Jordan College of Agricultural Sciences and Technology**

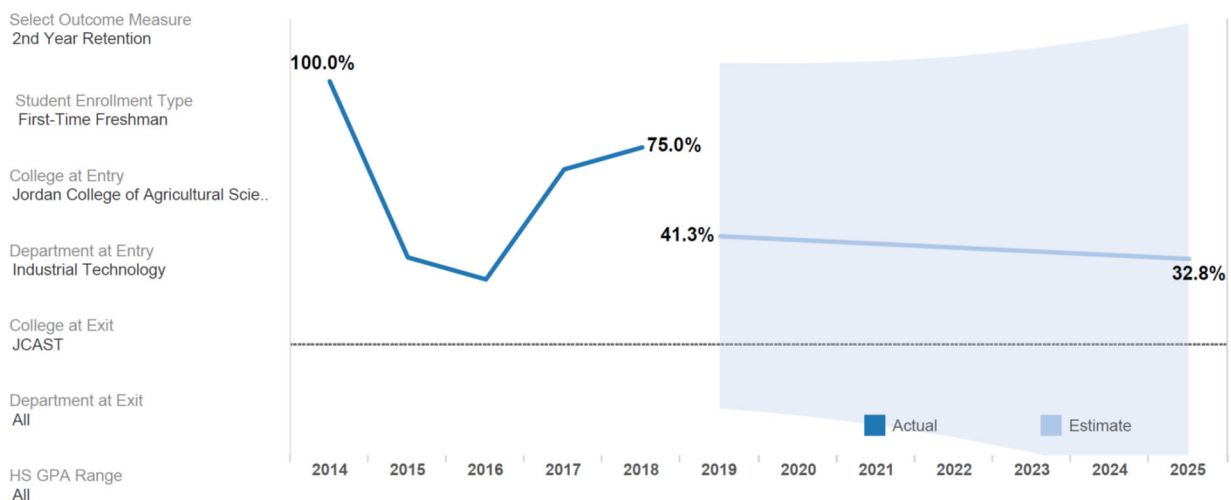


**Retention Rate: 2<sup>nd</sup> year First-Time and Transfer**

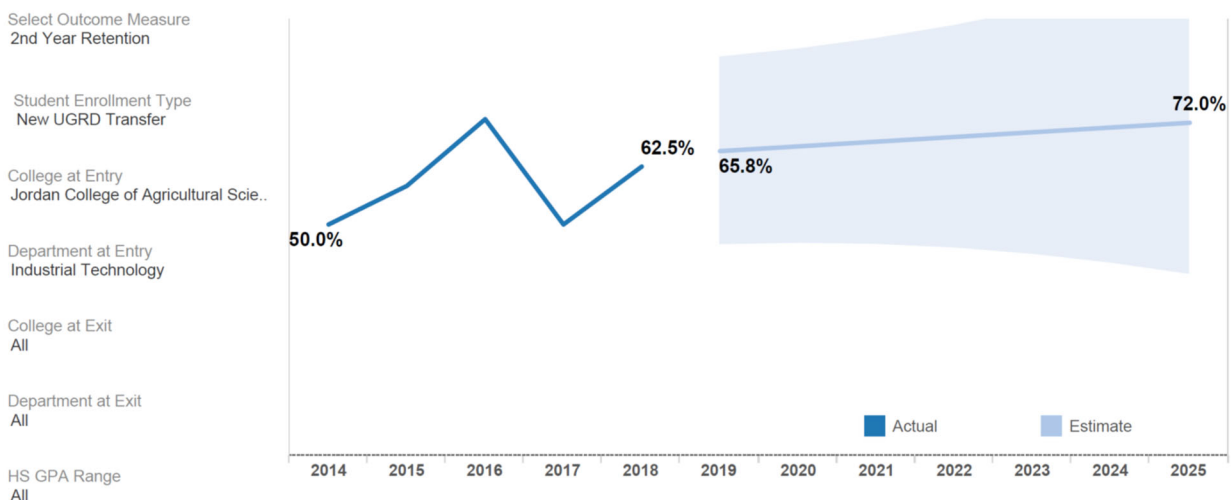
The department's 2<sup>nd</sup> year graduation rates for transfer students are shown below. It should be noted that the IT cohort sizes are very small and do not allow for a meaningful comparison.



**2nd Year Retention of Full-Time, First-Time Freshman Cohorts  
Entry Cohorts from Fall 2014 to Fall 2018  
College at Entry: Jordan College of Agricultural Sciences and Technology**



**2nd Year Retention of Full-Time & Part-Time, New UGRD Transfer Cohorts  
Entry Cohorts from Fall 2014 to Fall 2018  
College at Entry: Jordan College of Agricultural Sciences and Technology**



**2c. Covid-19 response.**

The department moved to online course delivery in mid-March 2020. Most faculty members and students had experience with online classes and the change was seamless. The department faces challenges with the online delivery of its laboratories. Some of the skills that are included in the educational outcomes require skills that the student will obtain through face-to-face practical lab experience. Such labs are not possible to be taught through an online delivery.

The department has scheduled most of its courses in face-to-face mode for Fall 2021.

#### **2d. Advisory Board**

The following Table includes the members of the department's advisory board.

## 2d. Advisory Board Members

First Name	Last Name	Position	Company	Email	Position on Advisory Board
Brian	Emerson			<a href="mailto:bemerson@fcoe.org">bemerson@fcoe.org</a>	Member
Farrell L.	Foley	Metallurgical Engineer & Owner	Eliminator Manufacturing, Inc.	<a href="mailto:farrell@eliminatormfg.com">farrell@eliminatormfg.com</a>	Member
Mark	Jackson	President	Blue Dolphin Design & Engineering Corp.	<a href="mailto:mark.jackson@bluedolphinengineering.com">mark.jackson@bluedolphinengineering.com</a>	Member
John	Marr	Production Manager	Betts Spring Manufacturing	<a href="mailto:john.marr@betts.1868.com">john.marr@betts.1868.com</a>	Member
Rion	Morgenstern	President	Cannon Sleep Products	<a href="mailto:rion@cannonsleep.com">rion@cannonsleep.com</a>	Member
Mike	Obradovich	Quality Engineer	Grundfos Pumps Mfg. Corp.	<a href="mailto:mobradovich@grundfos.com">mobradovich@grundfos.com</a>	President
Mark	Peterson	IT Site Coordinator	Quad Graphics	<a href="mailto:mark.peterson@qg.com">mark.peterson@qg.com</a>	Member
Michael	Roy	Sr. VP-MFG	Anlin Window Systems	<a href="mailto:mcr500@anlin.com">mcr500@anlin.com</a>	Member
James	Yager	Owner	Strategic Farming	<a href="mailto:jim@strategicfarming.com">jim@strategicfarming.com</a>	Member
Tom	Marderosian	Production Manager	Bee Sweet Citrus	<a href="mailto:tommy@beesweetcitrus.com">tommy@beesweetcitrus.com</a>	Member

### 3. Publications

Daming Zhang

Jia, G., Li, L., Zhang, D.

*Journal of Chemistry*

Effect analysis on combustion and emission characteristics of a rotary burner fueled by biomass pellet fuel

July 2020

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Article ID 3618382

1-12

ISSN 2090-9063, 2090-9071

DOI: [10.1155/2020/3618382](https://doi.org/10.1155/2020/3618382)

Daming Zhang

Jiang, Y., Li, H., Hua, L., Zhang, D.

*Biosystems Engineering*

Three-dimensional flow breakup characteristics of a circular jet with different nozzle geometries

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