

Leveraging Technology and Data Analytics to Improve Retention

Dr. Lisa Dunning, Associate Vice President
University College

 Delaware State University

BLUEPRINT

The Gateway to Success

Better Prepare
Students Before
College & Enhance
Improve the
Admission Process



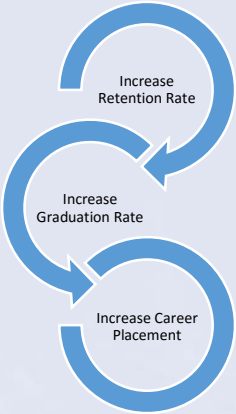
Transform Student
Support Services &
Expectations



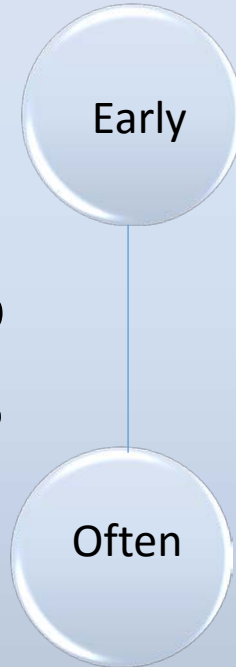
Transformation
of Student
Success



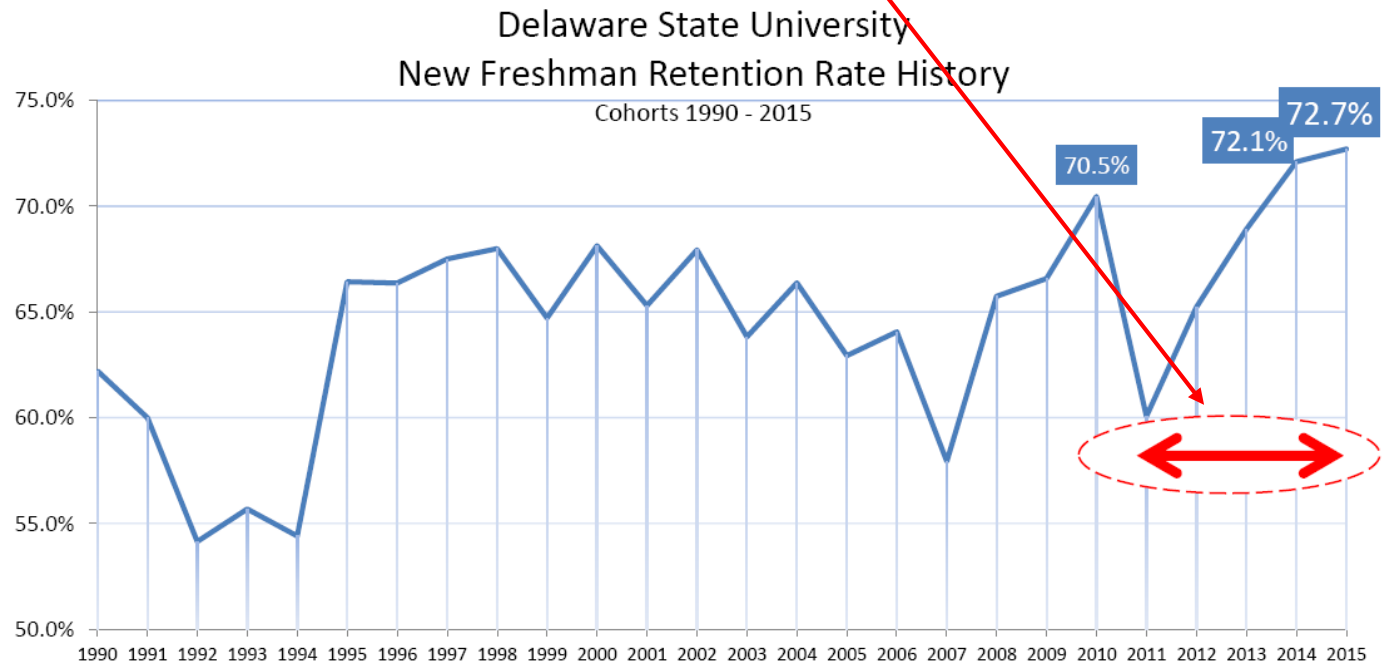
Student Individual
Development
Plans (IDPs)



DSU's progress with retention is linked to setting targets, communicating them to the campus community, and measuring progress proactively.



What Happened?



Actionable Data Insight

Transparency of data

Effective decision making

Who is not returning?
Why not?

How often are students receiving advising?

Execution of student success initiatives

Consistency of IDP Sessions

Frequency of academic advising

Timely Interventions

Delaware State University | Dashboard for Preliminary New Freshman Retention by College, Department and Major
 Fall 2016 New Freshman Cohort Pre-Registered for Spring 2017 as of 1/19/2017 6:39 AM

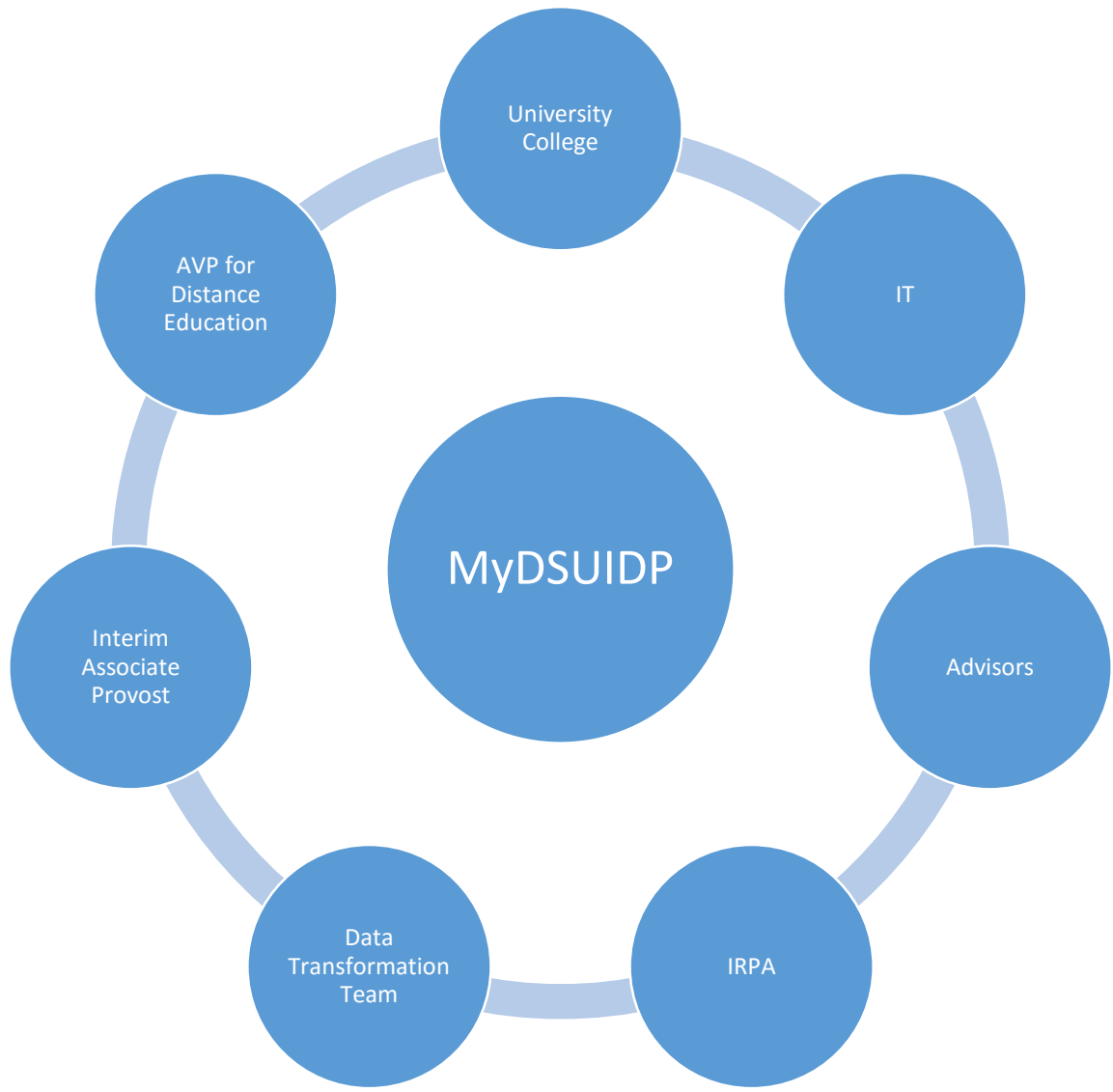
KPI: Red = 0 - 91.4%; Yellow = 91.5% - 94.4%; Green = 94.5% and above

College	Department	Major	Cohort	Retention Goal (95%)	Registered	% Registered	KPI Registered	Cleared*	% Cleared*	KPI Cleared
CAHSS	Art	Total	15	14	15	100.0%	●	14	93.3%	▲
	English and Foreign Languages	Total	5	5	5	100.0%	●	5	100.0%	●
	History, Philosophy, and Polit	Total	19	18	18	94.7%	●	18	94.7%	●
	Integrated Studies	Total	1	1	1	100.0%	●	1	100.0%	●
	Mass Communication	Total	81	77	72	88.9%	◆	70	86.4%	◆
	Music	Total	13	12	12	92.3%	▲	11	84.6%	◆
	Psychology	Total	55	52	50	90.9%	◆	49	89.1%	◆
	Sociology	Total	75	71	71	94.7%	●	69	92.0%	▲
	Total	Total	264	251	244	92.4%	▲	237	89.8%	◆
CARS	Agricultural and Natural Resou	Total	31	29	28	90.3%	◆	28	90.3%	◆
	Human Ecology	Total	10	10	10	100.0%	●	10	100.0%	●
	Total	Total	41	39	38	92.7%	▲	38	92.7%	▲
CEHPP	Education	Total	54	51	51	94.4%	●	50	92.6%	▲
	Nursing	Total	136	129	126	92.6%	▲	125	91.9%	▲
	Public and Allied Health	Total	48	46	47	97.9%	●	44	91.7%	▲
	Social Work	Total	27	26	24	88.9%	◆	24	88.9%	◆
	Total	Total	265	252	248	93.6%	▲	243	91.7%	▲
CMNST	Biological Sciences	Total	97	92	89	91.8%	▲	87	89.7%	◆
	Chemistry	Total	14	13	13	92.9%	▲	13	92.9%	▲
	Computer and Info Science	Total	29	28	26	89.7%	◆	23	79.3%	◆
	Mathematical Science	Total	3	3	2	66.7%	◆	2	66.7%	◆
	Physics	Total	27	26	26	96.3%	●	26	96.3%	●
	Total	Total	170	162	156	91.8%	▲	151	88.8%	◆
COB	Accounting	Total	30	29	27	90.0%	◆	27	90.0%	◆
	Airway Science	Total	26	25	25	96.2%	●	25	96.2%	●
	Business Administration	Total	96	91	86	89.6%	◆	86	89.6%	◆
	Sport Management	Total	49	47	47	95.9%	●	46	93.9%	▲
	Total	Total	201	191	185	92.0%	▲	184	91.5%	▲
Total	Total	Total	941	894	871	92.6%	▲	853	90.6%	◆

*Cleared students are registered and cleared. 100% of registered students must clear to achieve the retention rate shown.

Technology to Redesign Academic Advising to Yield Student Success





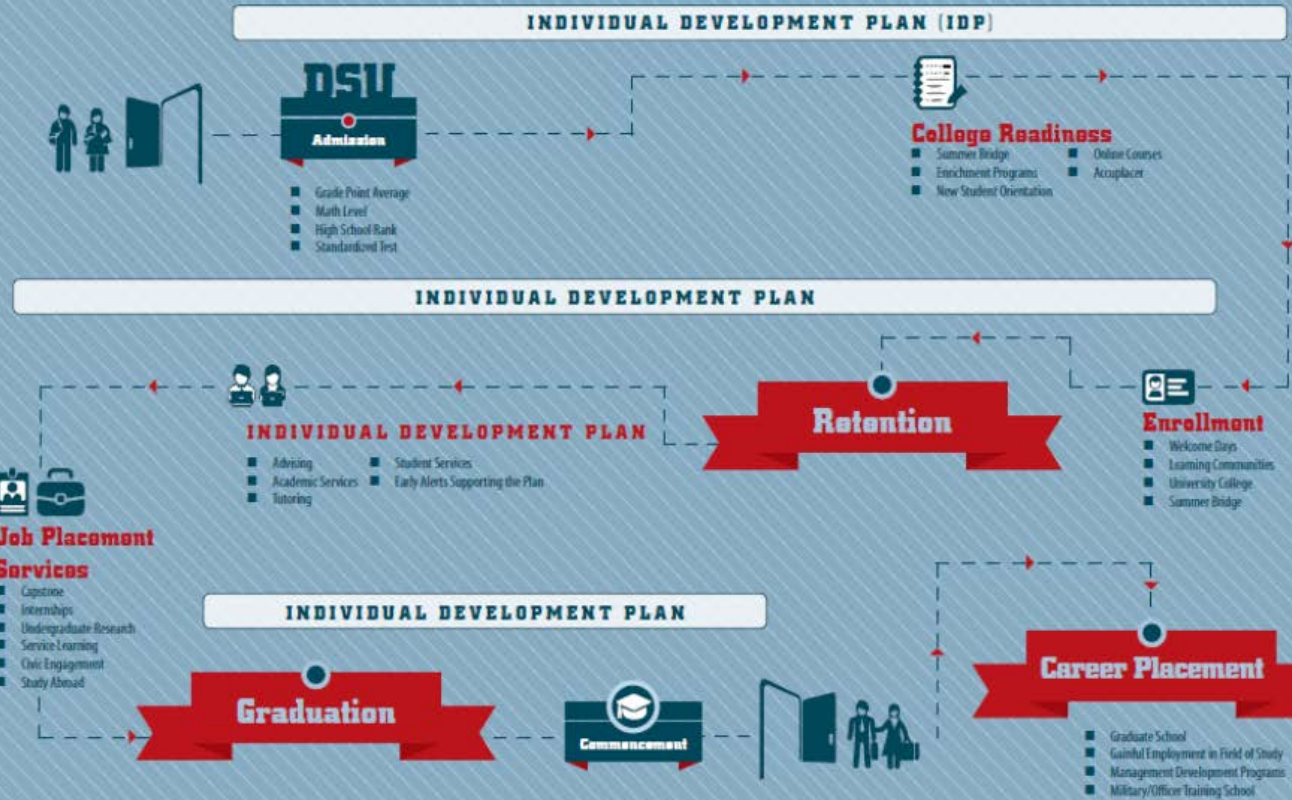
GPS to MyDSU IDP



Getting Prepared to Succeed (GPS) is a pathway to help new students navigate their journeys toward retention and graduation from Delaware State University, using personal attention in academics and student services to guide successful experiences from recruitment through post-baccalaureate plans.



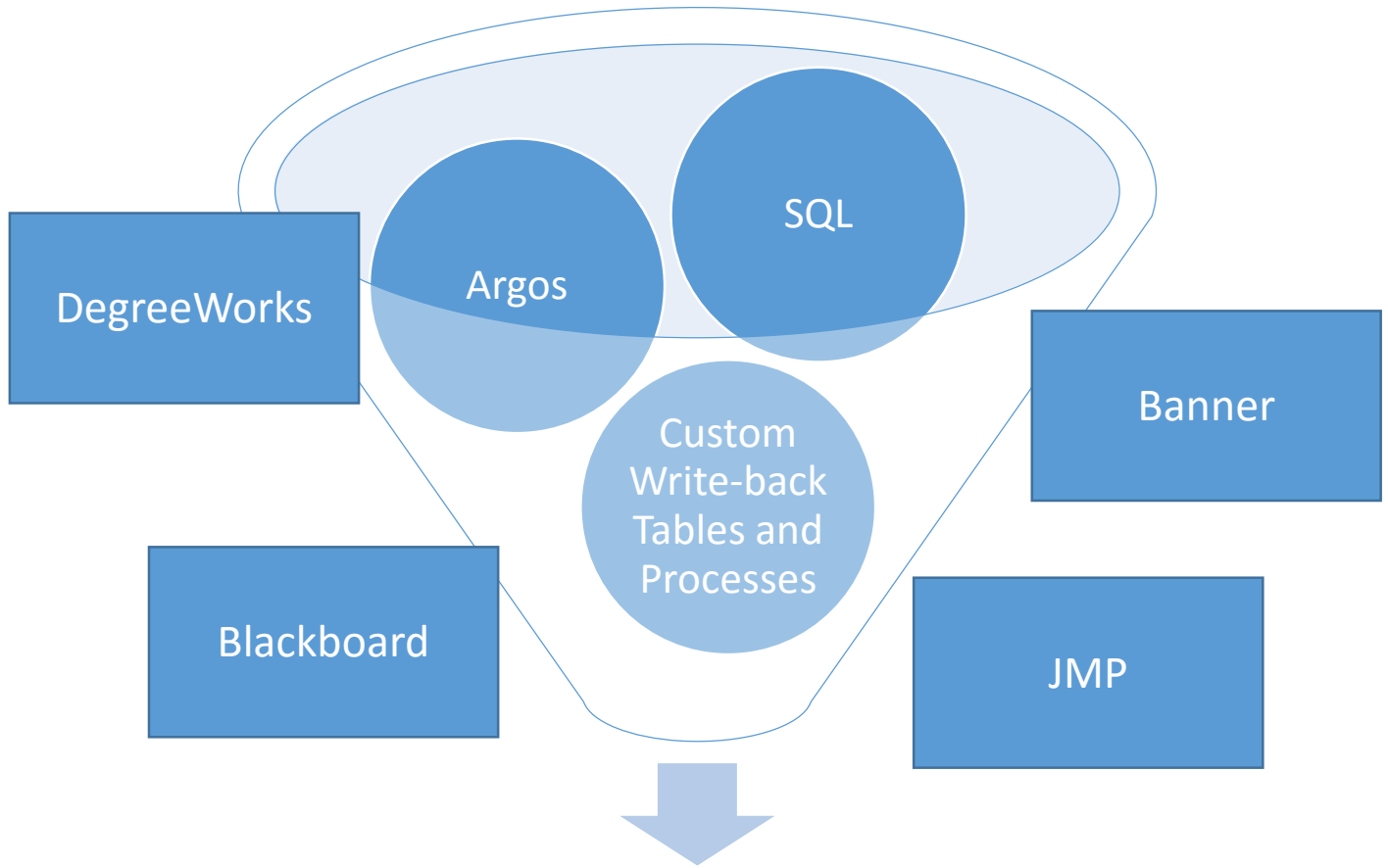
INTEGRATED TRANSFORMATION PROCESS



RETENTION

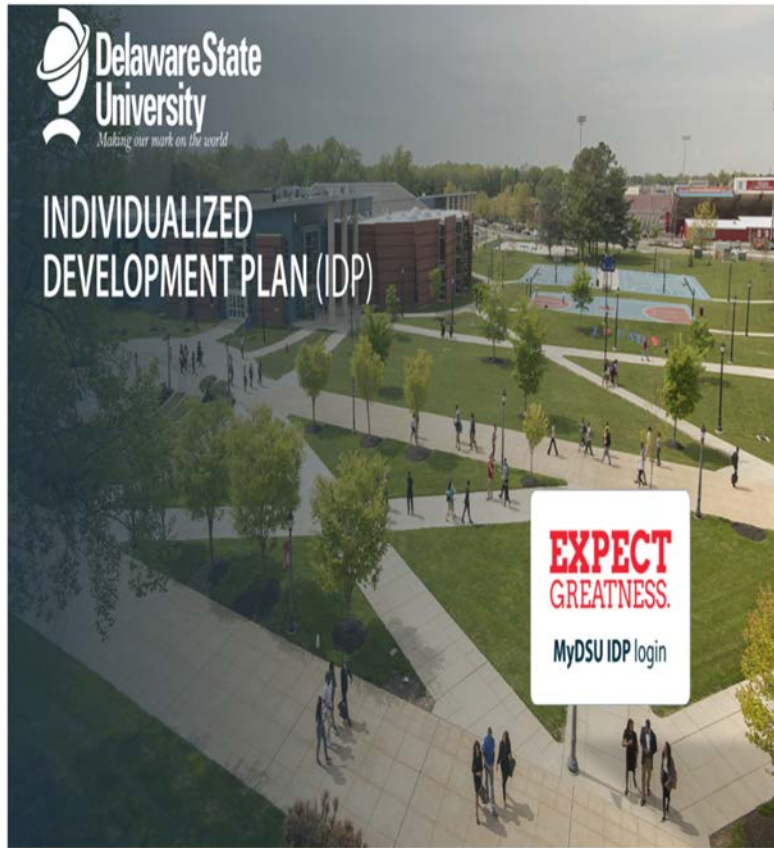
GRADUATION

CAREER PLACEMENT



MyDSU IDP V.2

IDP Login



Free DSU Degree Works

Student Profile

Root > Achievement > MyDSU IDP - Dashboard

Save Dashboard Settings | Reports | Run

Student Search | **Student Profile** | Academic Data | Financial Aid | Advisor Comments | Student Analytics | Advisor Analytics | Email | Predictive Analytics

Student Information:

ID: _____ Current Term: _____ Academic Standing: _____ Cumulative GPA: _____ Attempted Hours: _____ Earned Hours: _____ Passed Hours: _____

Name: _____

Admissions Information	EXPECT GREATNESS	Address Information
Admission Term: Admission Type: High School High School GPA: SAT Math: SAT Reading: SAT Total: ALEKS: Accuplacer Math: Accuplacer English: Math Placement English Placement Transfer Credits: Last College Attended:		Student Housing Housing Type: Room Number: Building: Mailing Street Line 1: Street Line 2: City: State: Zip Code: Phone:
Activities/Attributes	ID: Confidential: Date of Birth: Gender: Email: Cell Phone: Residency:	Aspirations/Goals
NF Cohort Category: Cohort: Student Athlete: Honors Program: Merit Scholar: Inspire Scholar: Band/Choir Member: Student Leader: First Generation Status:	Advisor: UNIVC Entry: UNIVC Exit: Classification: Major: Concentration: Minor: Educational Goal:	Degree Works

Academic Data

Root > Training > krsuder > IDP 05.13.2016 - Dashboard

Student Search Student Profile **Academic Data** Financial Aid Advisor Comments Student Analytics Advisor Analytics Email Predictive Analytics

Student Information:

ID: [Redacted] Current Term: 201613 Time Status: Part time Cumulative GPA: 2.9613 Attempted Hours: 31 Earned Hours: 28 Passed Hours: 31

Upcoming Term(s):

Term	CRN	Course Name	Course Subject	Course Number	Section	Instructor	Meet Days	Begin Time	End Time	Credit Hours	Mid Term Grade	Registrar
201701	16980	FUNDAMENTALS OF MICROBIOL	BIOC	221	12		TR	1300	1450	4		NR
201701	16578	FUNDAMENTALS OF MICROBIOL	BIOC	221	01		MW	1200	1250	0		NR
201701	15027	ELEMENTARY STATISTICS	MTSC	241	01	Carr, Ellen	MWTF	1000	1050	3		NR
201701	15160	SPRUCH	ENGL	200	15	McCarr, Sonja	MWTF	0900	0950	3		NR
201701	15610	LIFETIME FITNESS & WELLNESS	MYSC	101	08	Robinson, Cara	TR	0830	1045	2		NR
201701	16325	INTRO TO SOCIOLOGY	SOCC	101	06	Price, Laha	TR	0800	0915	3		NR

6 items

Current Term:

Term	CRN	Course Name	Course Subject	Course Number	Section	Instructor	Meet Days	Begin Time	End Time	Credit Hours	Mid Term Grade	Registrar
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0 items

Historic Term(s):

Term	CRN	Course Name	Course Subject	Course Number	Section	Instructor	Meet Days	Begin Time	End Time	Credit Hours	Mid Term Grade	Final Term Grade
201603	18581	COLLEGE ALGEBRA	MTSC	121	11	Moore, Matthew	MWTF	1300	1350	3	C	B
201603	18860	MEDICAL TERMOINOLOGY	MYSC	212	41	Comer, Cara				3	A	B
201603	17634	ANATOMY & PHYSIOLOGY II	BIOC	208	12	Clelland, Joanne	F	1000	1150	4	C	B
201603	17648	ENGLISH COMPOSITION II	ENGL	102	25	Royce, Samantha	TR	0800	0915	3	B	A
201603	17914	INTRO TO GENERAL PSYCHOE	PSYC	201	08	Rogers, Amy	TR	0930	1045	3	A	A
201603	17829	UNIV SEM II NRSO/PRE NRSO	NURS	192	04	Stringfield, Yvonne	M	1200	1250	1	A	C
201603	18581	COLLEGE ALGEBRA	MTSC	121	11	Moore, Matthew	T	1200	1315	3	C	B
201601	15767	INTRO TO ALGEBRA	MTSC	075	18	Zhou, Fang	MWTF	1100	1150	2	S	S
201601	15767	INTRO TO ALGEBRA	MTSC	075	01	Zhou, Fang	MWTF	0800	0855	1	S	S

Financial Data

Root > Training > krsuder > IDP 05.13.2016 - Dashboard

Student Search Student Profile **Academic Data** **Financial Aid** Advisor Comments Student Analytics Advisor Analytics Email Predictive Analytics

Student Information:

ID: [Redacted] Current Term: 201613 Time Status: Part-time Cumulative GPA: 2.9643 Attempted Hours: 34 Earned Hours: 28 Passed Hours: 34

Financial Aid Information:

Term	Fund Code	Fund Source	Fund Code	Fund Title	Renew GPA	Renew Hours	Other Renewal	Athletic Aid Ind
201603	PGRANT	FDRL	GRNT	Federal Pell Grant				
201603	DSUADV	INST	SCHL	DSU Advantage Grant	2.75	24	None	
201603	DUNSUB	FDRL	LOAN	Direct Unsub Loan				
201603	DSUB	FDRL	LOAN	Direct Sub Loan				
201601	DUNSUB	FDRL	LOAN	Direct Unsub Loan				
201601	PGRANT	FDRL	GRNT	Federal Pell Grant				
201601	DSUB	FDRL	LOAN	Direct Sub Loan				
201601	DSUADV	INST	SCHL	DSU Advantage Grant	2.75	24	None	

3 items

Student Account Hold Information:

Hold Type	Hold Description	Reason	Start Date	End Date	Hold Status
N2	NetNet Payment Plan	201603 - NRS Payment Plan	12/1/2015	5/6/2016	I
PT	Payment Plan Terminated	201603 AMPD DWS PMT TERM	12/1/2015	1/04/2016	I
NF	NetNet Payment Plan - Fall	201601 - NRS Payment Plan	7/1/2015	12/11/2015	I

3 items

Student Clearance Information:

Academic Year	Term	Paid Indicator	Paid Indicator Date
2017	201701	N	


1 item

Delaware State University

Academic Advising Session - Advisor Comments

Student Search	Student Profile	Academic Data	Financial Aid	Advisor Comments	Student Analytics	Advisor Analytics	Email	Predictive Analytics
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Student Information:

ID:	Current Term:	Academic Standing:	Cumulative GPA:	Attempted Hours:	Earned Hours:	Passed Hours:	
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IDP Session Comments

IDP Session:

Comment Creator: ldunning **Comment Date:** 1/26/2017 2:45:04 PM

Comment:

Advisor Comments

Comment Creator: ldunning **Comment Date:** 1/26/2017 2:45:04 PM

Comment:

View Comment History

[Degree Works](#) [Bb](#) [Image Now](#)

Student Analytics

Student Search

Student Profile

Academic Data

Financial Aid

Advisor Comments

Student Analytics

Advisor Analytics

Email

Predictive Analytics

Student Information:

ID:

Current Term:

Academic Standing:

Cumulative GPA:

Attempted Hours:

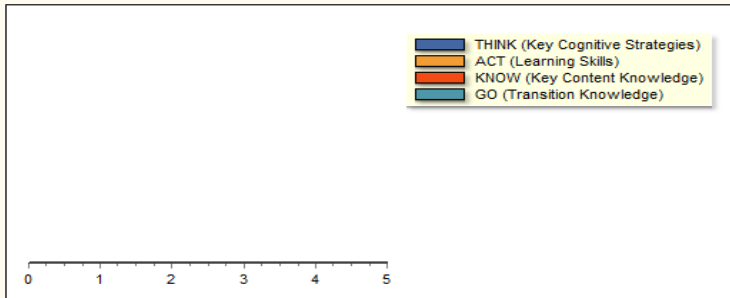
Earned Hours:

Passed Hours:

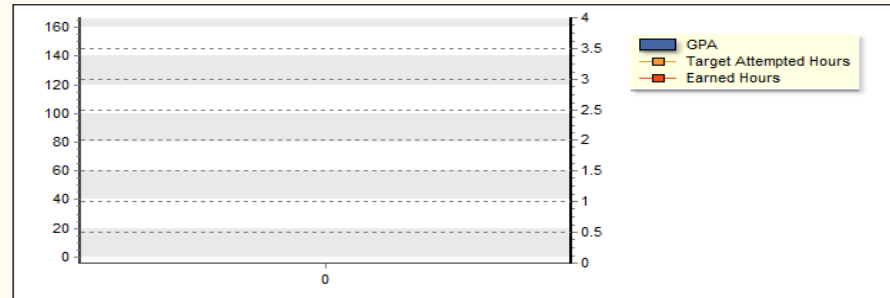


Name:

Conley Readiness Index (CRI) Scores



Annual Progress Towards Degree



Advisor Alerts

ALERT

Co-Curricular Activities

Mentor Assignment:

Club Membership:

Symposium/Workshop Attendance:

Average Weekly Work Hours:

College-Specific Activities

College Activity 1:

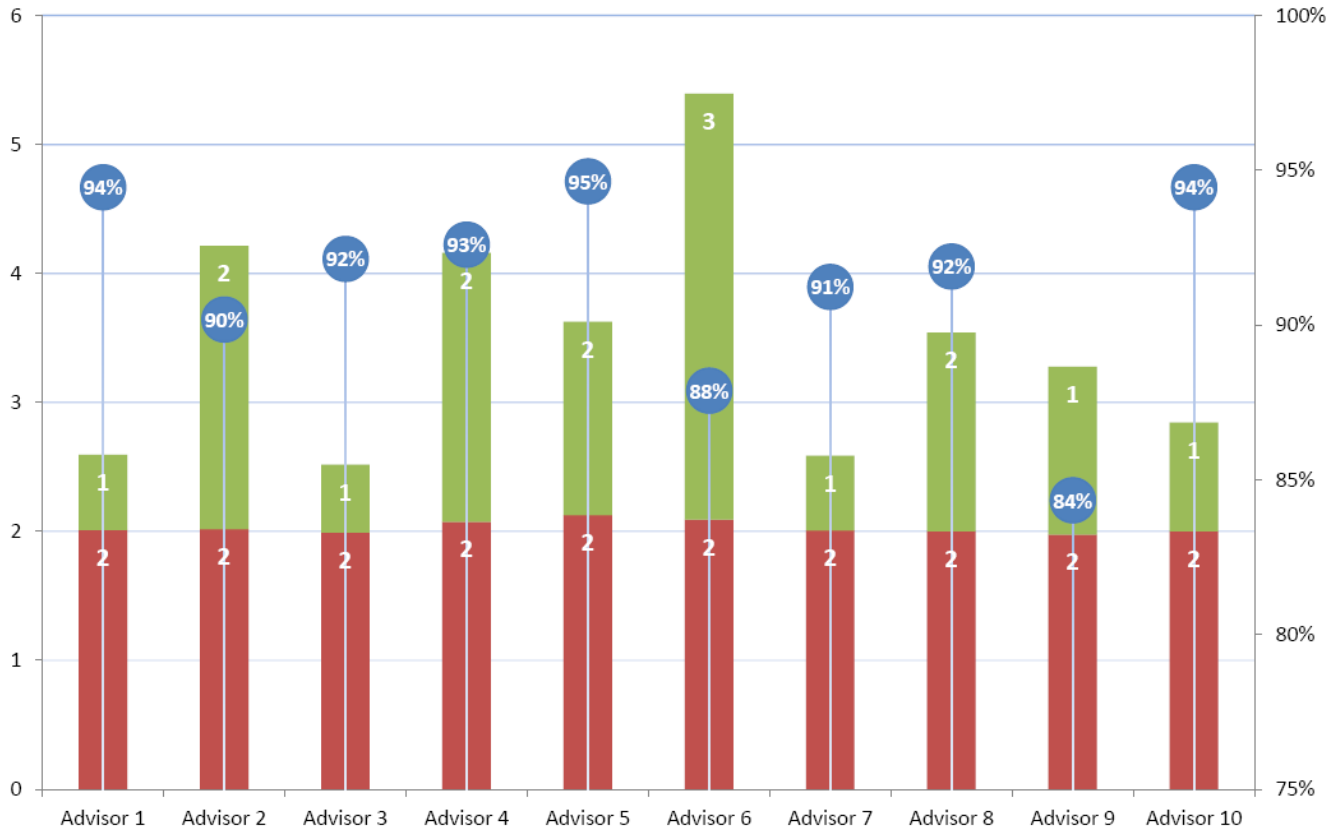
College Activity 2:

College Activity 3:

Submit

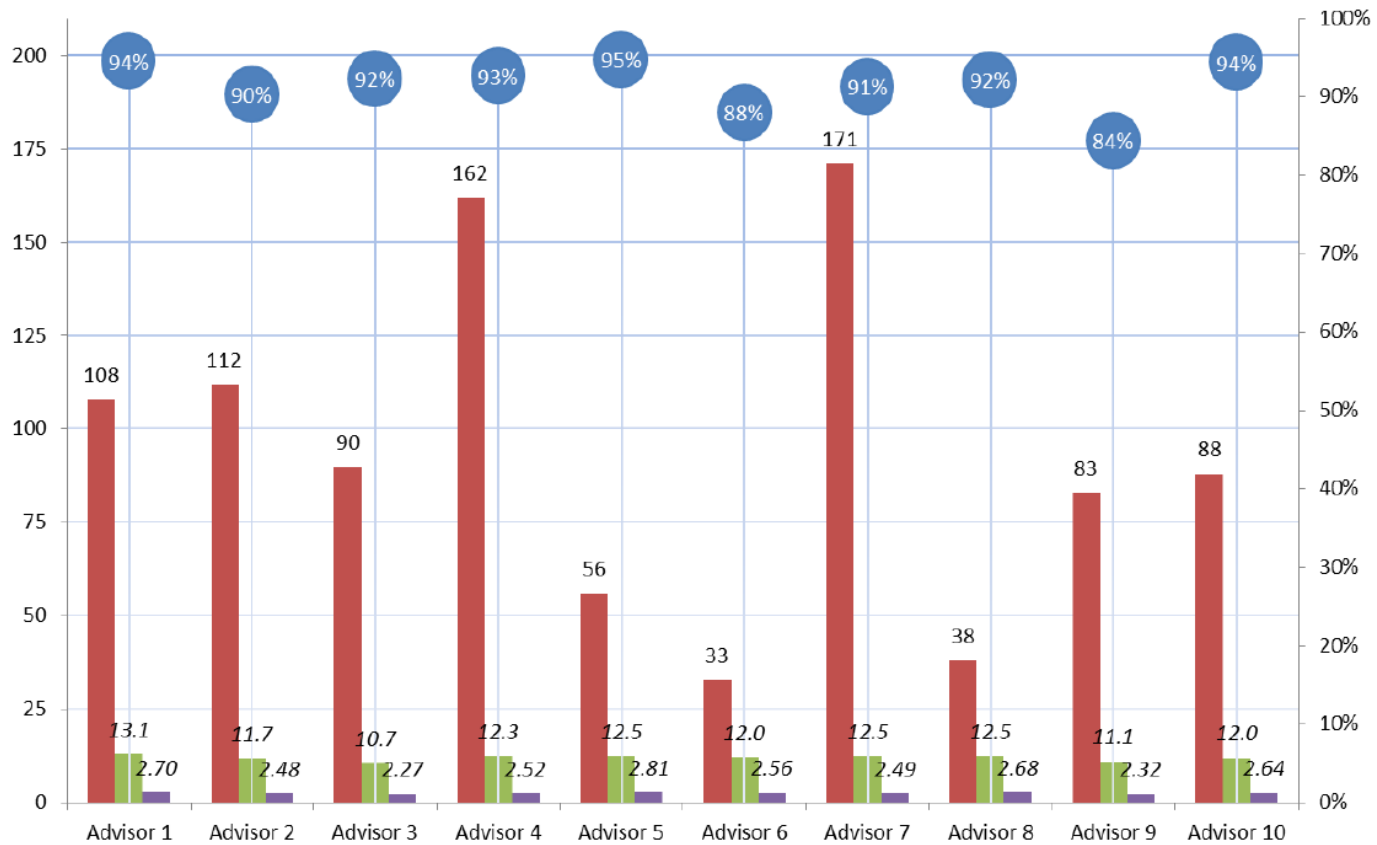
Delaware State University
 Fall 2016 New Freshman Cohort Advisor Records and IDP Sessions
 Fall 2016

■ Average of Distinct IDP Sessions ■ Average of Advisor Records ● Fall to Spring Retention



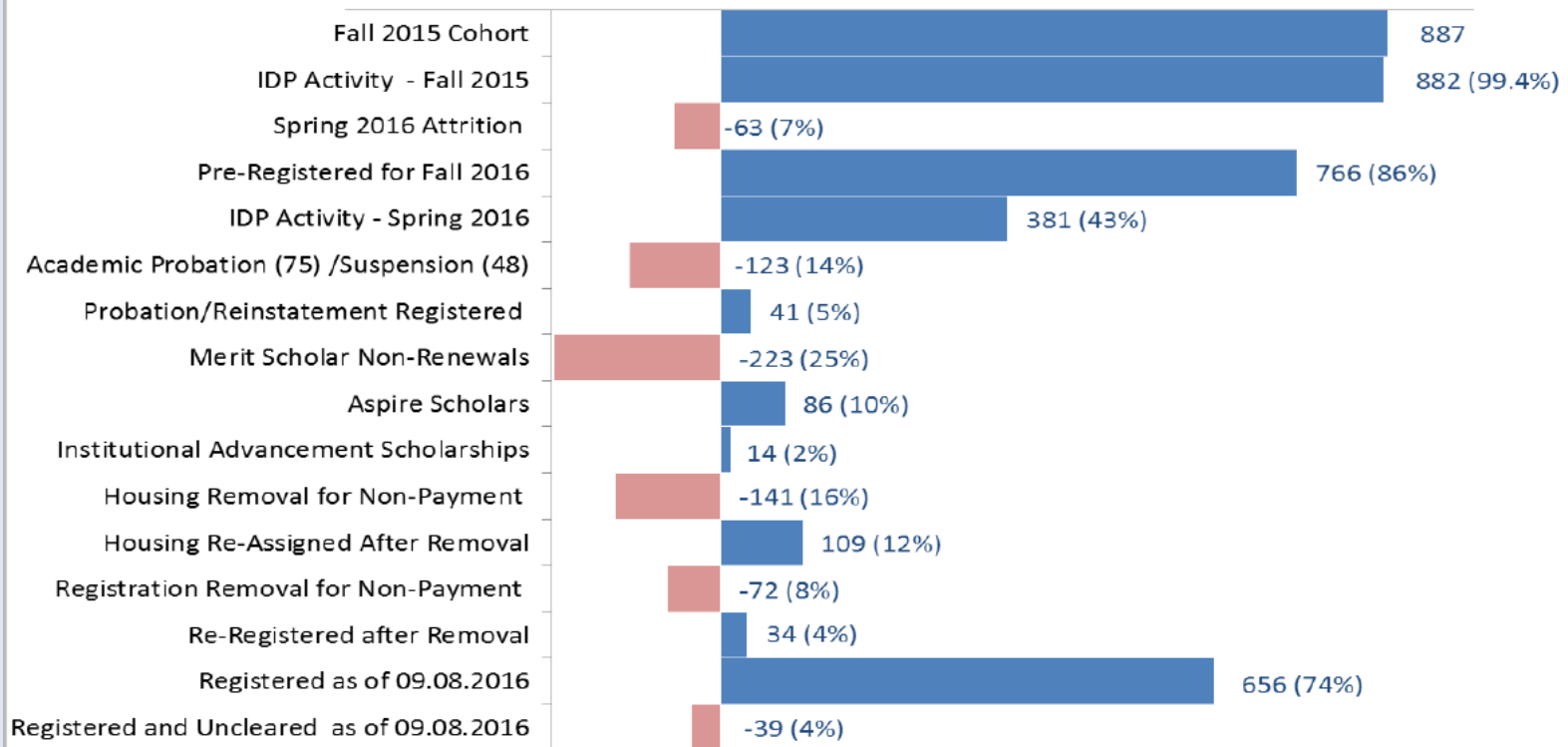
Delaware State University
 Fall 2016 New Freshman Cohort Fall Performance

■ Cohort Size ■ Average Hours Earned ■ Average GPA ● Fall to Spring Retention



Fall 2015 New Freshman Cohort Retention Impacts

As of 09.08.2016



Data Brief : Correlation of Grades with Retention

2016-02



Project / Problem Statement

It is believed that courses at DSU can be grouped based on grade distribution and are correlated with retention. We test the hypothesis that the meaningful automatic clustering of courses taken by new freshmen in cohorts 2011-2015 freshmen is possible. We also examine the association between passing freshmen courses and first to second-year retention.

Methodology

Population

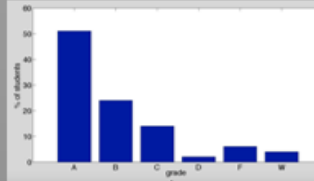
- 4,064 new freshmen enrolled in cohorts 2011/12—2014/15
- Dataset included transcript data (courses/grades per student) and information whether a student was retained to the second (sophomore) year
- The freshmen took total of 47,155 classes (on average 11.6 per year)

Statistical methods

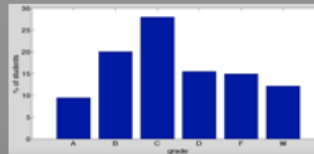
- For classes with ≥ 50 total students in 4 years, histograms of grades are computed
- Percentages of As, Bs, Cs, Ds, Fs and Ws were determined and used as features for K-means clustering algorithm ($k=5$)
- Association between passing a class and being retained was studied through contingency matrices
- Chi-square test ($p\text{-value} < 0.05$) and odds ratios ($OR > 1$) were used to quantify the association

Results

Cluster: "Easy A"



Cluster: "Difficult Classes"



Class	N students	p-value	OR	OR (95% CI)
Core courses				
ENGL101	3420	<0.001***	6.38	4.77—8.55
ENGL102	2835	<0.001***	4.24	2.97—6.06
MVSC101	3038	<0.001***	5.25	4.12—6.67
****191*	4052	<0.001***	4.19	3.39—5.20
****192*	3236	<0.001***	4.44	3.48—5.65
History				
HIST101	214	<0.001***	8.24	3.52—19.32
HIST102	102	0.02*	4.56	1.12—18.57
HIST201	670	<0.001***	3.77	2.27—4.27
HIST202	320	<0.001***	5.44	2.44—12.14
HIST203	708	<0.001***	7.42	3.85—14.32
HIST204	754	<0.001***	6.06	3.25—11.32
Literature				
ENGL201	63	0.004**	17.99	1.41—229.36
ENGL205	65	<0.001***	27.00	3.73—195.18
Social Science				
POLS103	112	<0.001***	5.78	2.01—16.63
PSYC201	2048	<0.001***	3.87	2.87—5.21
SCC101	1212	<0.001***	6.35	4.02—10.03
Arts/Humanities				
ART101	593	<0.001***	8.14	3.71—17.90
ART104	51	0.04*	5.43	0.91—32.53
MUSC100	182	0.02*	3.19	1.16—8.79
MUSC101	685	<0.001***	4.88	2.84—8.38
FREN101	347	<0.001***	5.37	2.91—14.39
SPAN101	1008	<0.001***	3.78	2.31—6.20

*Denotes all university seminar courses, regardless of major

Class	N students	p-value	OR	OR (95% CI)
Mathematics				
MTSC075	3001	<0.001***	2.07	1.77—2.42
MTSC101	610	0.02*	1.75	1.07—2.85
MTSC102	86	0.02*	3.27	1.16—9.21
MTSC110	210	0.03*	1.87	1.06—3.28
MTSC105	113	0.005**	4.51	1.48—14.39
MTSC121	1451	<0.001***	3.58	2.63—4.87
MTSC122	194	0.002**	5.69	1.70—19.08
MTSC125	75	0.002**	10.00	1.89—53.05
Natural Science				
BIOL101	399	0.002**	2.39	1.35—4.23
BIOL103	187	0.007**	4.47	1.40—14.30
BIOL105	132	0.02*	2.86	1.24—6.59
BIOL107	125	0.03*	3.50	1.09—11.27
BIOL110	78	0.004**	N/A	N/A—N/A
CHEM100	99	0.01*	11.25	1.11—114.08
CHEM101	224	<0.001***	6.43	2.23—18.51
CHEM101Lab	215	<0.001***	12.20	2.89—51.57
ASTR101	94	0.04*	4.77	0.98—23.19
PHYS141	55	0.004**	16.12	1.48—175.32

Passing these general education courses is correlated with new freshman retention.

- It is possible to automatically group courses according to grade distributions. The groups correspond to:
 - MTSC075 very high percentage of U grades
 - Moderately difficult and difficult courses requiring analytical/quantitative reasoning, e.g., MTSC110/11, BIOL101/102, PHIL201, ECON201, ENGR210, CSC110, ASTR101
 - Courses easy to pass and easy to get A (general education non-quantitative courses, introductory non-quantitative courses, and university seminar courses), e.g., MUSC100, SPAN101/102, MGMT191/92

- For a majority of general education courses, passing the course increased the odds of retaining a student (OR range from 1.75 to 27.00)
- As "gate keeping" courses (≥ 50 students, $>20\%$ W+F grades, $OR > 1$) we identified:
 - AVIA102, 102L
 - MTSC075, 101, 102, 105, 110, 121
 - BIOL101, 105, 191, 193, 201, 207, 208
 - MUSC107, 120, 191
 - ECON201
 - CSC1191
 - POLS103

Strategies / Interventions

- Increase academic support for courses with high percentage of Ws, Fs and Ds (using SIs, TAs, etc.)
- Consider condensing content and potential merging of general education non-quantitative courses
- Integrate into IDP early-warning system based on unsatisfactory performance in general education courses linked to attrition/retention (Blackboard)
- Reconsider curricula and educational approach in gate keeping courses

Outcomes

Lessons Learned

Teams perfect what you inspect

Centralized tool to better track campus wide interventions

Need Improvement in the Academic Alert System

Next Steps

Examine the relationship between number of engagements and retention

IDP App

Analytics and insights from data

Questions, Comments, and/or Advice?



Delaware State University