



# The Relations Between Big Five Personality, Class Attendance, and Grades

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# Agenda

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1. Yamagata University (YU) & Higher Education in Japan
2. Using Beacons for Attendance Tracking
3. First-Year Experience (FYE) Program at YU
4. Big Five Personality Traits
5. Results and Conclusions

**Yamagata University  
&  
Higher Education in Japan**

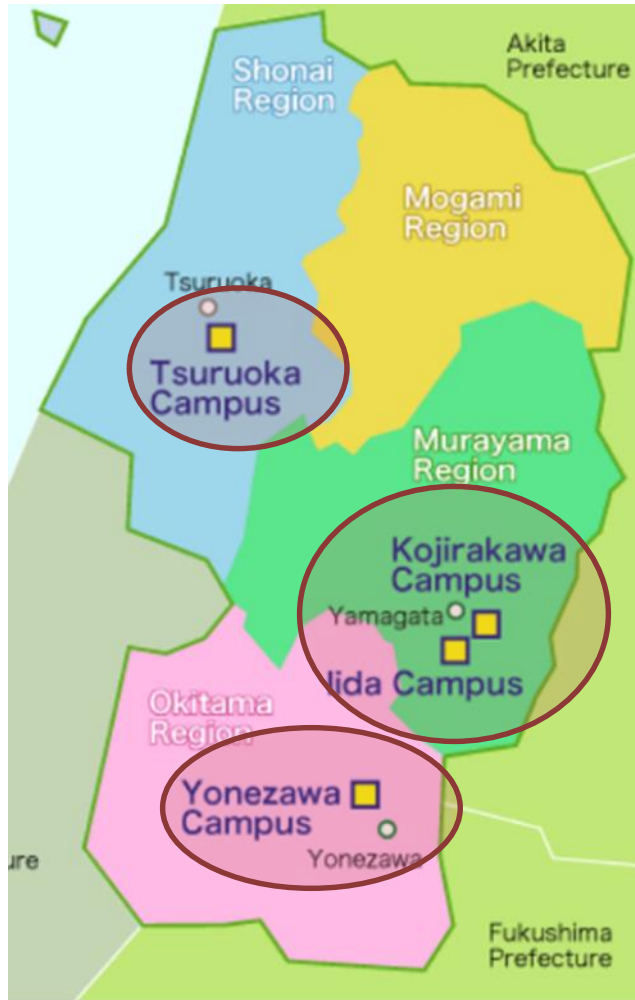


# Where is Yamagata, Japan?



- Direct Distance from Tokyo: 190 miles
  - 3 hours by bullet train
  - 45 minutes by airplane

# Yamagata University (YU)



## ■ Type: National University

- Year Founded: 1878
- Multi-Campus (4 campuses)
  1. Kojirakawa Campus (K)
  2. Iida Campus (I)
  3. Yonezawa Campus (Y)
  4. Tsuruoka Campus (T)

## ■ Six Colleges:

- Agriculture (T)
- Education, Arts and Science (K)
- Engineering (Y)
- Literature and Social Science (K)
- Medicine (I)
- Sciences (K)

- Kojirakawa Campus – Tsuruoka Campus: 60 miles
- Kojirakawa Campus – Yonezawa Campus: 30 miles

# Yamagata University (YU)

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## ■ Degree Programs

- Undergraduate: **22**
  - Master: **19**
  - Doctorate: **10**
- } **Same Tuition  
\$4,800/year**

## ■ 2017-2018 FT Enrollment & FT Faculty/Staff

- Degree-seeking UG: **7,546**
  - **Male: 62%**
- Degree-seeking, first-time freshmen: **1,731**
  - **In-state: 23%**
- Degree-seeking Grad: **1,394**
  - **Male: 75%**
- Faculty & Staff: **800+** & **300+**, respectively

# Key Characteristic of H.E. in Japan

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- The academic year begins in April and ends the following March.
- Students **must decide on their major** when they apply for **admission**.
  - **Can't change the major after enrollment**
  - No double or more majors
  - No pre- program (e.g., Pre-Med, Pre-Vet, etc.)
  - Almost **impossible** to
    - **Transfer** to another university
    - Have **flexible study plan**
- **High expectation to graduate in four years**

# Identifying At-Risk Students





# Developing an Early Alert System

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## ■ Problems

- No campus-wide integrated database
- Relative vs. Absolute Grading  
→ **GPA is not reliable.**
- High school GPA and ranks are still kept in **paper format.** → **not in the DBs**
- No standardized test (i.e., ACT or SAT) that ALL applicants need to take  
→ **no common data point**

## ■ Available Data

- Big Five Personality Traits
- First-Year Experience (FYE) Class Attendance
- FYE Course Grades

# Using Beacons for Attendance Tracking



# Attendance Tracking at YU

## Current Method

NFC-based reader



IC chip-embedded student ID card

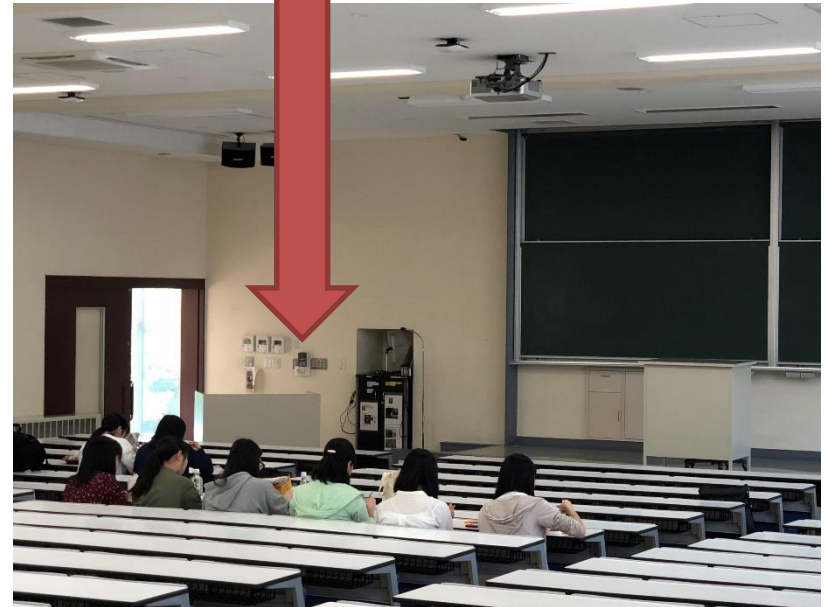


NFC = Near-field Communication

# Location of the Readers



NFC-based reader



# Problems with This Method

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## ■ Cost

- NFC-based reader: **\$2,000** per unit
- Student ID card: **\$30** per card

## ■ With Large-sized Classes

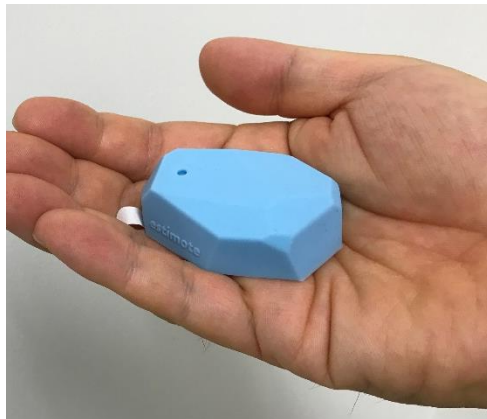
- Too many students for the limited 10 min. interval between classes

## ■ Accuracy

- Can't record the time spent in class

# Taking Attendance Using Beacons

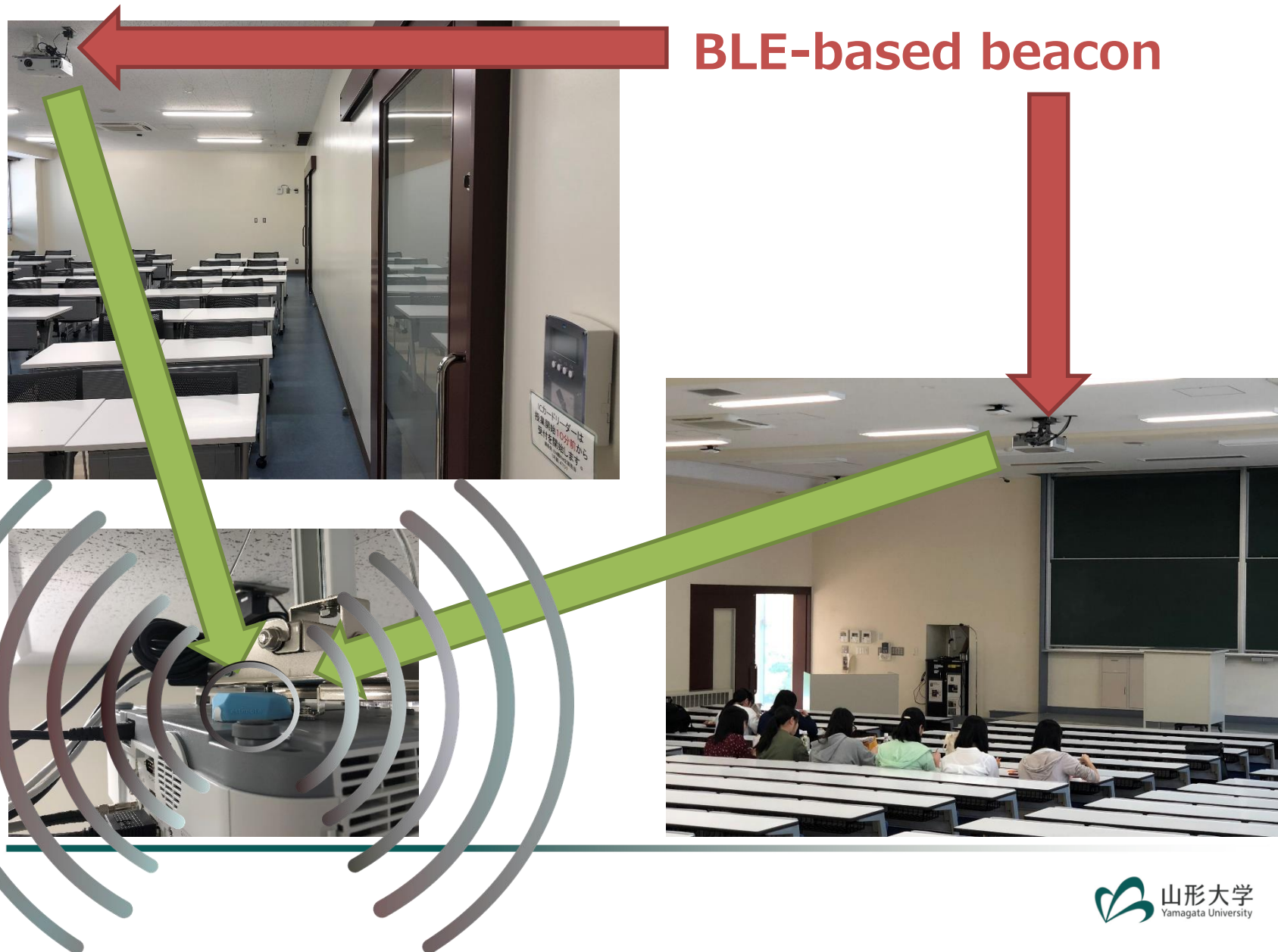
- Ongoing  
Bluetooth 4.0 (BLE) based beacon & students' smartphone



- **\$40** per unit

- **99+%** of YU students own a smartphone with BLE

# Location of the Beacons

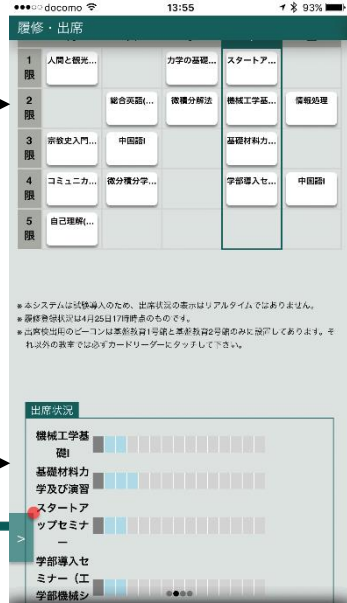




# YU Portal: Main Features

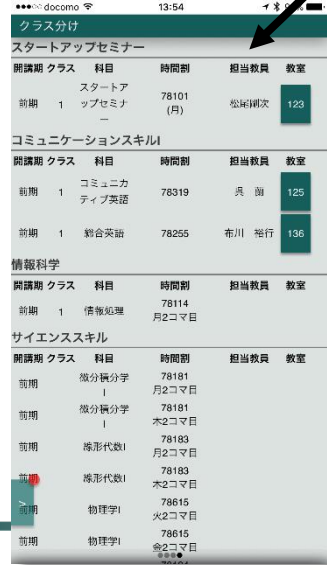
- Test
- Survey
- Personalized Class Schedule
- **Class Attendance Record**
- Personalized Notification
  - e.g., Class Cancellations

Class Schedule

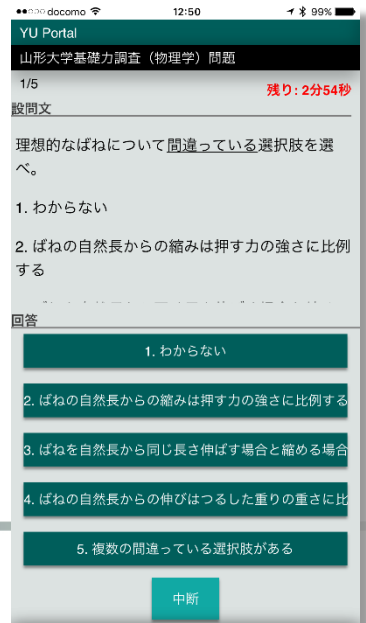


Attendance Record

Semester Course Schedule



Test





# Class Schedule & Attendance Record

履修・出席

	月	火	水	木	金
1限	スタートア...		食と栄養	市場と人間...	
2限	コミュニカ...	フランス語...			感動する化...
3限	食料生命環...	テニス(ス...	日本考古学...	スポーツ健...	フランス語...
4限	現場から学...	総合英語(...	化学の基礎...	人間の生活...	
5限				スタートア...	

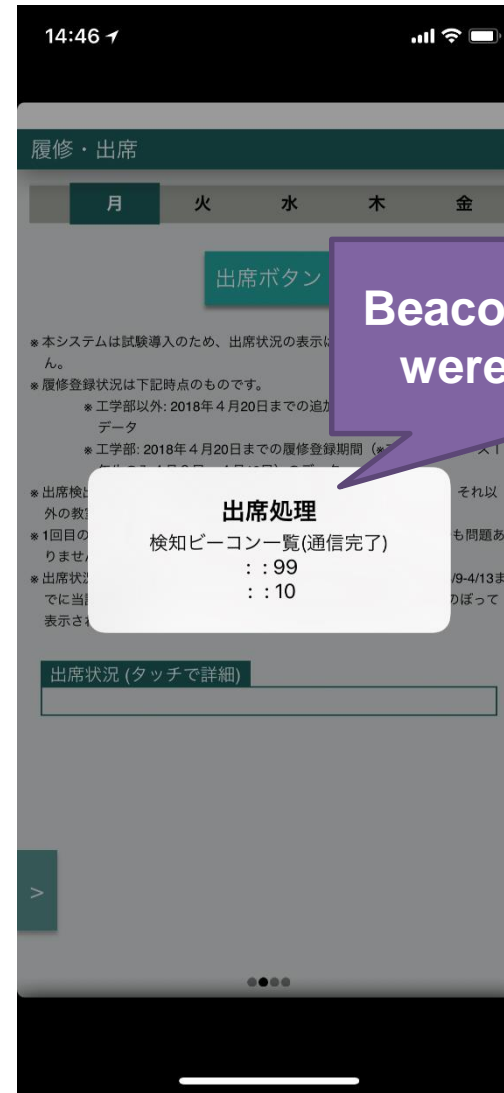
集中講義

\*本システムは試験導入のため、出席状況の表示はリアルタイムではありません。  
 \*履修登録状況は下記時点のものです。  
   \*工学部以外: 2018年4月20日までの追加・取消・変更期間 (WEB)のデータ  
   \*工学部: 2018年4月20日までの履修登録期間 (\*フレックスコース1年生のみ4月9日~4月13日) のデータ  
 \*出席検出用のビーコンは基盤教育1,2,3号館のみに設置してあります。それ以外の教室では必ずカードリーダーにタッチして下さい。  
 \*1回目の授業の出欠はその後履修希望を変える人もいますから欠席でも問題ありません。  
 \*出席状況は授業時間割が表示される4/16までは表示されませんが、4/9-4/13までに当該講義室のICリーダーにタッチした記録は4/16以降過去にさかのぼって表示されます。

出席状況 (タッチで詳細)

食と栄養	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
日本考古学概論 (歴史学)•	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
化学の基礎(化 学)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# How it works: YU Portal & Beacons



# First-Year Experience (FYE) Program & Big Five Personality Traits



# FYE Program at YU

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## ■ Course Goals

1. To promote further development of **student success skills**
2. To help students gain **confidence** at new environment (**learn from experience**)

## ■ Characteristics

- 2 semester credits (meet 15 times, 100 min./class)
- 25 students per class
- **Mandatory** for ALL new first-year students
- **Target Course Grade: B or above**
- **(Unofficial) Attendance Requirement: 80%**

# Big Five Personality Test

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- Localized version developed by Professors Chieko and Yoshihiro Murakami

- 70 Yes-No Questions

- Big Five Personality Traits

- Openness to Experience
- Conscientiousness
- Extraversion
- Agreeableness
- Emotional Stability

Are they related to  
FYE class grade  
and/or  
attendance?

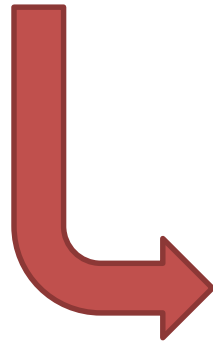
# Results and Conclusions



# Attendance vs. Grades (1)

FYE Course Grade		
Grade	Freq.	Percent
A	936	55.4
B	491	29.0
C	178	10.5
D	64	3.8
F	22	1.3
<b>Total</b>	<b>1,691</b>	<b>100.0</b>

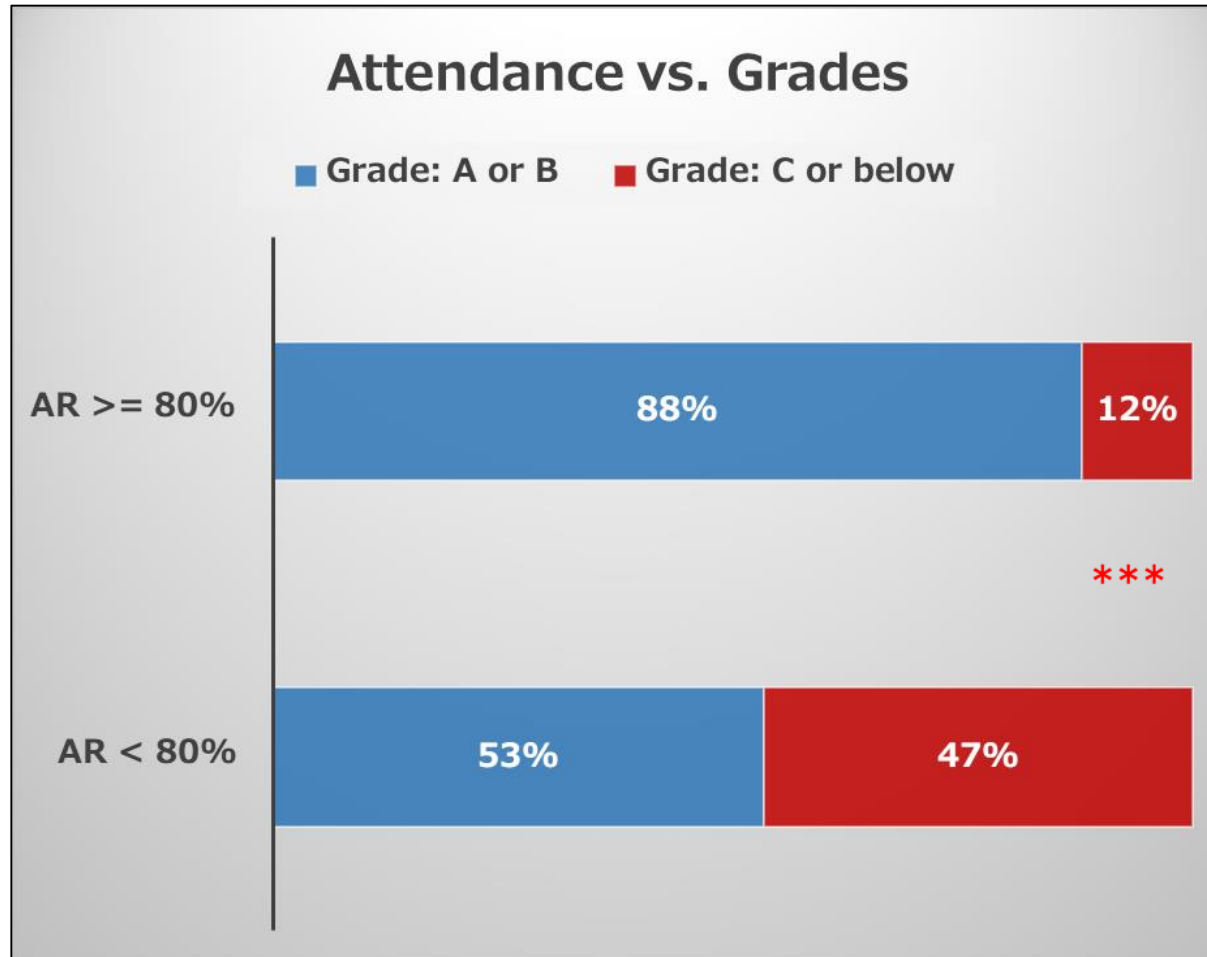
## ■ 2017 1<sup>st</sup> Semester (April – August)



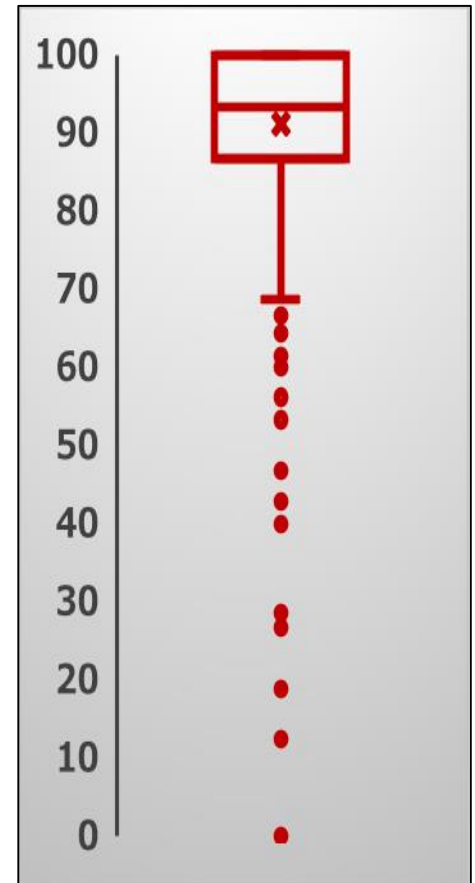
Mean Attendance Rate by Grade Group			
Grade Group	Freq.	Percent	Mean Attendance Rate***
A or B	1,427	84.4	92.9
C or below	264	15.6	82.0
<b>Total</b>	<b>1,691</b>	<b>100.0</b>	

**Note: Target Course Grade: B or above**  
**\*\*\*  $p < 0.0001$**

# Attendance vs. Grades (2)



### Box-Plot for AR



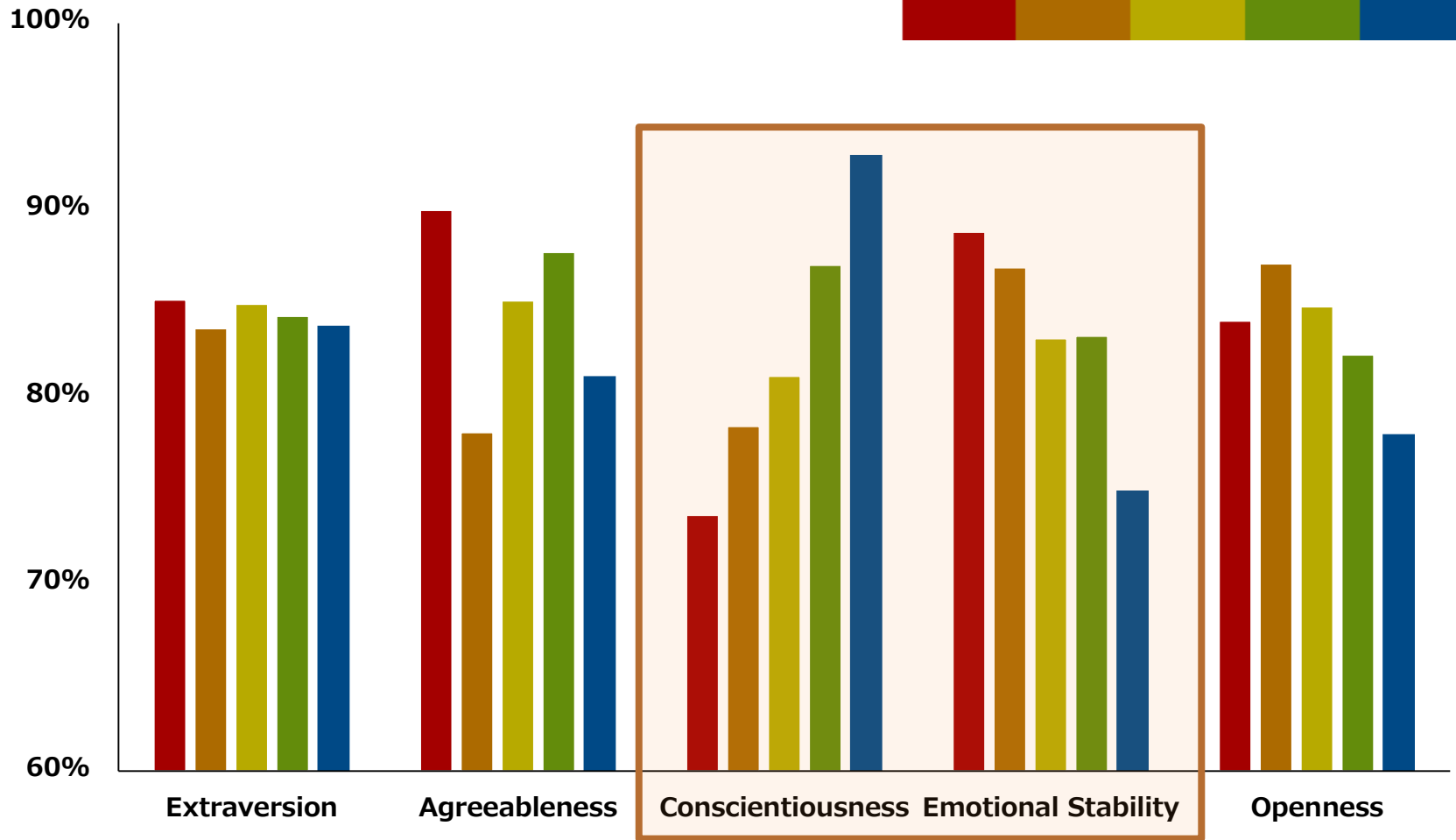
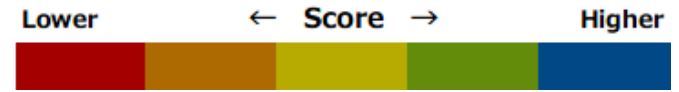
**AR = Attendance Rate for FYE Class**

**Note: (Unofficial) Attendance Requirement is 80%.**



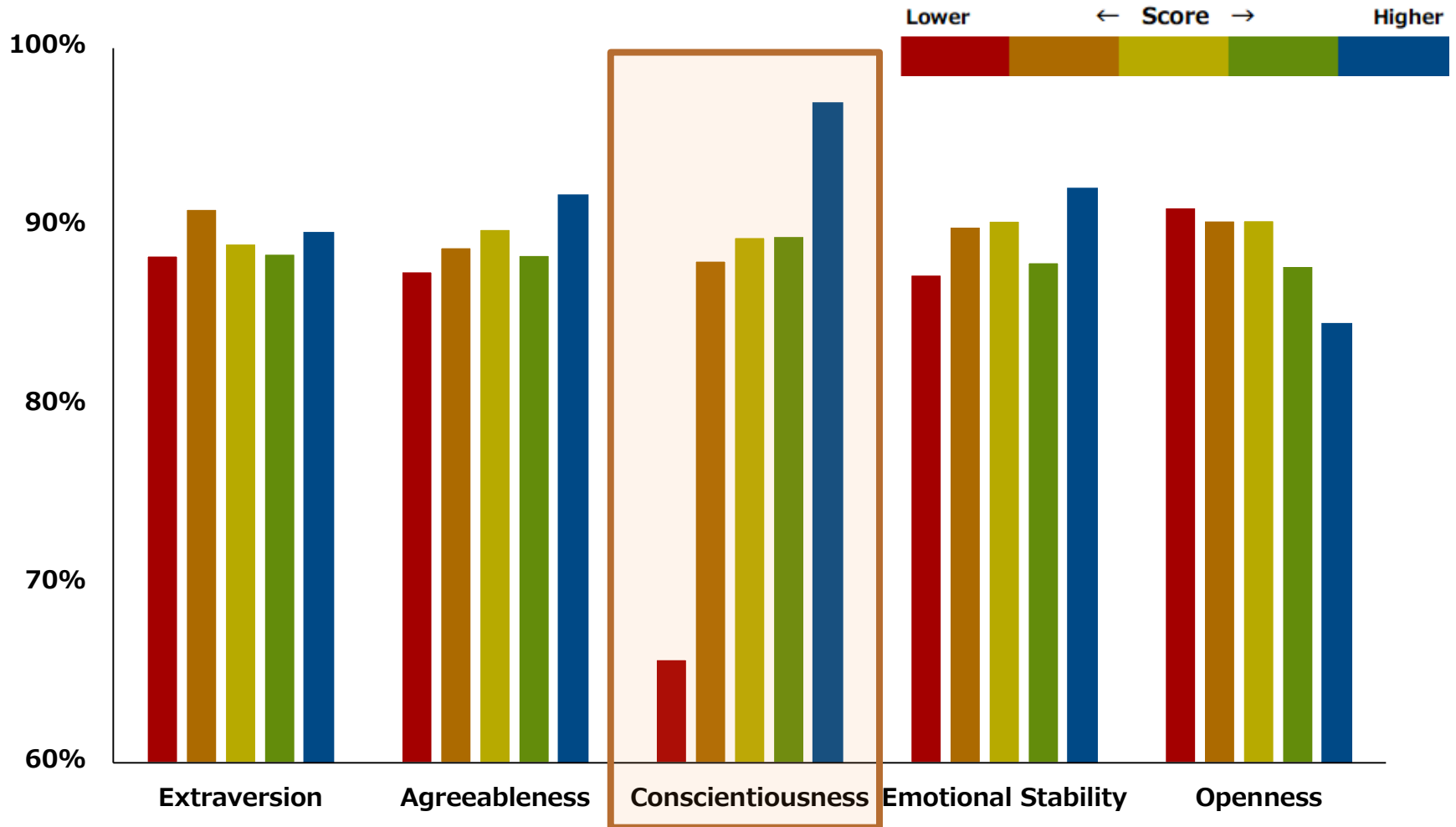
# Big Five Personality vs. FYE Grades

% Students who received B or above



# Big Five Personality vs. FYE Attendance

% Students who met the attendance requirement



# Conclusions

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- What we have found
  - ✓ FYE class attendance is related to its grade.
  - ✓ The personality trait of **conscientiousness** is **positively** related with **FYE course grade**.
  - ✓ **Conscientiousness** scores may predict the FYE class attendance.
  - ✓ The personality trait of **emotional stability** is **negatively** related with **FYE course grade**.
  
- Goal: YU Early Alert System

# Acknowledgements

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## ■ Special Thanks (in alphabetical order) to:

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