

**THE WEST KAZAKHSTAN STATE UNIVERSITY AFTER M. UTEMISOV  
NATURAL GEOGRAPHY  
FACULTY**

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**GRADUATE WORK**  
**PECULIARITIES OF TEACHING BIOLOGY IN HIGHER  
EDUCATIONAL INSTITUTIONS IN THE USA AND  
KAZAKHSTAN**


5B011300 - Biology

**Performed:**  
**Scientific adviser:**

Kazhalaeva N.A 01407 group  
Associate professor, Utaubayeva A. U.


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Uralsk, 2018




# Urgency

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- Success in scientific and professional activities of graduates of the George Washington university is largely due to good training. This University is in the top of the world rankings, which indicates a high level of education. GWU graduates are highly valued among employers worldwide. Many people in the field of higher biological education are interested in the system and organization of biological education at the University of G. Washington, on the content of the University's curriculum, which necessitates a comparative analysis of training in the University G. Washington and West Kazakhstan state University after M. Utemisov.
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- **Purpose of research.** To identify and distinguish on the basis of comparative analysis of the structure and content of biological disciplines general, particular and specific features inherent in the curricula of Kazakhstan and the United States.
  - **Object of research.** Educational and methodical complexes of biological disciplines implemented in the universities of Kazakhstan and the USA.
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- **Subject of research.** Specific features of the implementation of the structure and content of the programs of biological disciplines in West Kazakhstan state University after M. Utemisov and the George Washington university.
  - **Research problem.**
  - 1.To study the education system of Kazakhstan and the USA.
  - 2.To conduct a comparative analysis of the curricula of biological disciplines of West Kazakhstan state University after M. Utemisov and GWU.
  - 3.Application of advanced teaching methods of the American education system in Nazarbayev Intellectual School.
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# Education system of Kazakhstan

## Послевузовское образование

- По возрасту ограничений нет

## Высшее образование

- обычно от 18 до 22 но по возрасту ограничений нет

## Среднее образование

- Возраст: от 6 до 18

## Дошкольное воспитание и обучение

- Возраст: от 3 до 6

# Education system of USA

## Postsecondary and tertiary

- Community college, college, university

## Upper secondary

- High school, senior school

## Secondary

- Middle school, junior high school

## Primary

- Elementary school, grade school

## Preprimary

- Nursery school, preschool, kindergarten

## ЗКГУ им.М.Утемисова



2 института, 6  
факультета, 22 кафедры  
с 51 специальностями

Профессорско-  
преподавательский состав  
насчитывает около 500  
человек, в том числе 21  
докторов и 147  
кандидатов наук.

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Natural - geographical faculty consists  
of 3 departments:

- Department of Biology and Ecology;
- Department of Geography;
- Department of Chemistry.





# Университет Дж.Вашингтона



Входит в 70 лучших университетов США

Имеет более 2000 программ бакалавриата и 200 программ магистратуры и докторантуры

В структуре 10 колледжей и школ


# Application Requirements

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- GRE (Graduate Record Examination), (GPA 3.8)
- GMAT (Graduate Management Admissions)
- Transcript
- Essay (250 – 650 words)
- Letter of recommendation


<b>SAT</b>	<b>ACT</b>	<b>IELTS</b>	<b>TOEFL</b>
1280/1600	29	6 - 6.5	550 - 650



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- Columbia College offers 56 bachelor's degrees. Among them are biological anthropology, Biophysics and biology.
  - The Department of biological Sciences at Columbia College prepares BS, BA, MS, PhD.
  - The program of bachelor of biological Sciences has 3 main areas:
    - " General biology",
    - " Ecology, evolution and environment»,
    - “Cell and molecular biology”.
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# Pedagogical education is often divided into these stages:

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1. Initial training. Teacher training (pre-training course as a fully responsible teacher);
  2. Introductory course (the process of learning and support during the first few years of study or the first year of study at a particular school);
  3. Professional development and continuous professional development (cpd).
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# Special licenses for teachers include:

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- Pre-school education (for pre-school children)
  - Primary education (first grade to sixth or eighth grade)
  - Secondary school (focused on teaching in grades 5-8)
  - Secondary education (accommodates specific subject areas for grades 7-12)
  - Specialized training (related to specific areas, such as special education or English as a second language)
- 



# Blackboard Learn - interactive teaching



THE GEORGE  
WASHINGTON  
UNIVERSITY  
WASHINGTON, DC

-  Change Text Size
-  High Contrast Setting

## Blackboard

Username

Password

Login

[Forgot your password?](#)



## Blackboard Update

Attention Safari 11.1 Users: There is an issue with users being able to upload files to Blackboard with the newly released Safari 11.1 (released on 03/29/2018). If you have already upgraded to this latest version of Safari, please use an alternate browser such as Chrome or Firefox when using Blackboard at this time. This notice will remain until the issue has been resolved.

Last update 04/05/2017.

# Content

- Course content
- Calendar
- Learning modules
- Assessments
- Assignments
- Grade Book
- Media Library

Biology 101  
Course Grades

Mina Akbar Overall Grade 8+

Item Name	Due Date	Status	Grade	Feedback
Design an Ecology Experiment First participated on 8/2/17 (Late)	7/31/17	Submitted	Pending	
Test 1: Theories and Interactions 2 attempts submitted	8/1/17	Submitted	83.67	
Guest Speaker Review	8/1/17	Submitted	19 / 25	
Evolution and Classification 2 attempts submitted (0 Late)	8/2/17	Submitted	30 / 30	D
Lab Report #1	8/11/17	Unopened	-- / 50	
Metabolism Essay Attempt 1 started	8/18/17	Draft saved	Pending	
Chapter 11 Quiz 3 attempts possible	8/25/17	Unopened	-- / 100	

Biology 101  
Evolution and Classific...

Details & Information

Due date  
8/2/17, 9:30 AM (CDT)

Attempts  
1 attempt left | 2 submitted (0 late)

Grading

Your Grade  
Grade is based on the last attempt with a grade. 30 / 30

Past due. This attempt will be marked late.

Start attempt 3

In WKSU curricula in the credit system of education consist of three cycles of disciplines

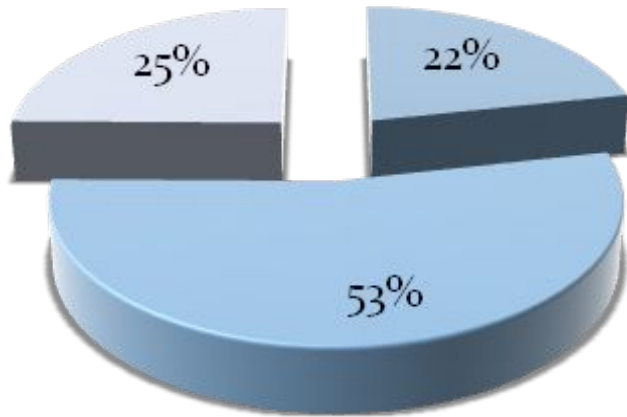
- 1) The cycle of General educational disciplines (GED);
- 2) Cycle of basic disciplines (BD);
- 3) Cycle of profile disciplines (PD).





# Curriculum WKSU

- Cycle of General subjects
- Cycle of basic disciplines
- Cycle of profile disciplines



# GWU curriculum

- Cycle of General subjects
- Cycle of profile disciplines



# Load (in credits) for curriculum two blocks universities disciplines

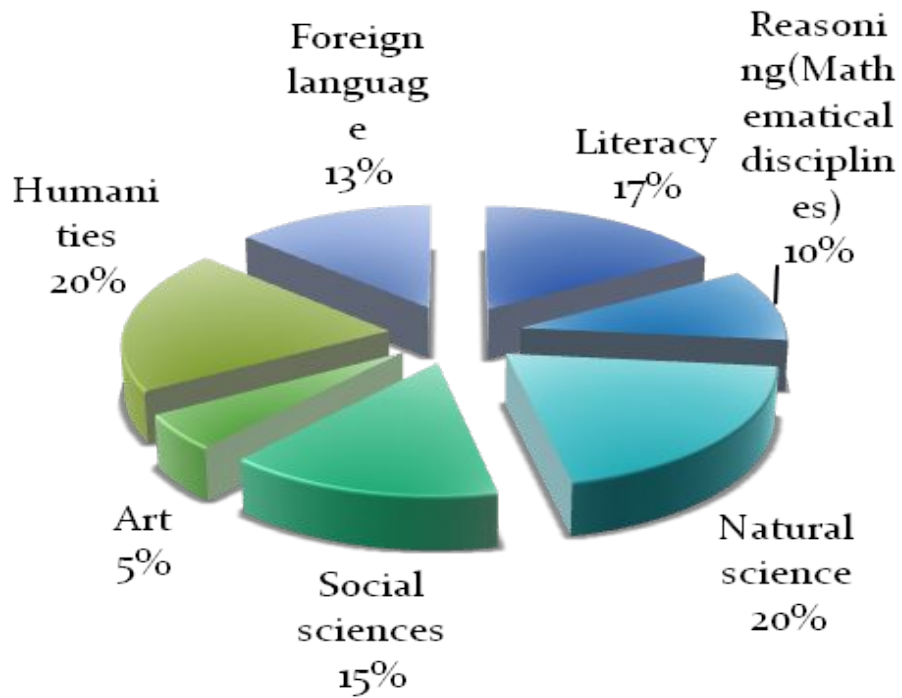
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<b>Discipline</b>	<b>WKSU</b>	<b>GW</b>
Literacy	-	10
Quantitative and logical reasoning (mathematical discipline)	-	6
Natural Sciences	70	72
Social sciences	10	9
Art	-	3
Humanitarian sciences	25	12
Foreign languages	24	8

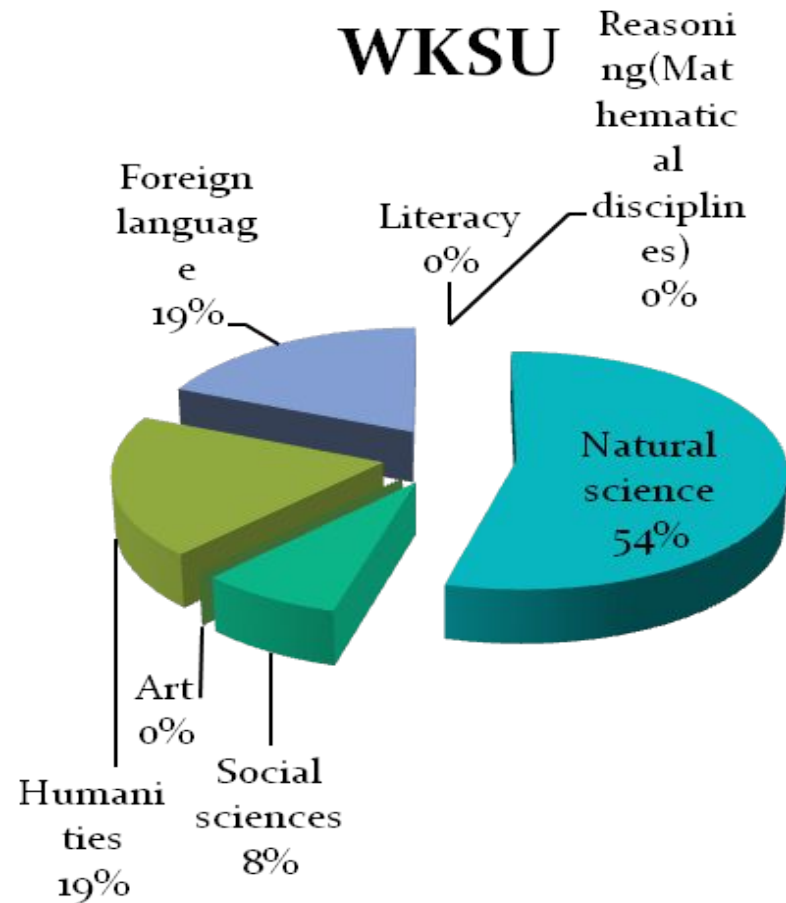
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# GWU



# WKSU



# Columbian College General Curriculum Requirements (GCRs)

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<b>Literacy</b>	<b>UW 1020 (first year) + 2 WIDs</b>
<b>Quantitative &amp; Logical Reasoning</b>	<b>MATH 1007 and above</b> <b>STAT (all)</b> <b>PHIL 2045, 3121</b>
<b>Natural Science</b>	<b>1) BISC and ANTH 1001, 1005, 3401, 3403, 3404, 3405, 3412</b> <b>2) CHEM</b> <b>3) GEOL</b> <b>4) GEOG 1002</b> <b>5) PHYS and ASTR</b>
<b>Social and Behavioral Sciences</b>	<b>ANTH (not 1001, 1005, 3400s); COMM (all); ECON (all); GEOG (not 1002); HMSR (all); LING (all); SMPA (not 2112, 2177, 3236); ORGSCI (all); PSC (all); PSYC (all); SPHR (all); SOC (all)</b>

## Creative and Performing Arts

**EALL 1075; FA (all); ENGL 1210, 2250, 2460, 2470, 2560, 2570, 3250, 3360, 3370, 3380, 3390, 4220; MUS 1051-1057, 1058, 1061, 1071, 1081, 1083, 1091, 1093, 1511-1516, 1517, 1518, 1519, 1520, 1521-1544, 1545, 1546, 1547, 1548, 1549, 1550, 1557, 1558, 1571, 1572, 2012-2016, 2018, 1095, 2058, 2072, 2318, 2661, 2662, 4085; SMPA 2112, 3236; TRDA 1017, 1035, 1150-1053, 1170, 1171, 1214, 2160-2163, 2172, 2173, 2179, 2180, 2215, 2216, 2250, 3174, 3175, 3220, 3221, 3223, 3225-3229, 3250, 3331-3336, 4275**

## Humanities

**AMST (all); AH (all); ARAB 3001, 3301, 4001, 4002; CHIN 3109-3112, 3162-3172, 4107, 4108, 4179, 4180; CLAS (all); ENGL (literature); FILM 2151-2154; FREN 3100, 3210, 3220, 3400, 3520, 3530, 3550, 3560, 3600, 3700, 4470, 4500, 4510, 4540, 4600; GER 2091, 2092, 2101, 2102, 2165, 4171-4175; GREK 3001, 3002; HEBR 3301, 4001, 4002; HIST (all); HMN (all); ITAL 3010, 3100, 3201, 3202, 3290, 3300, 4500, 4560; JAPN 3111, 3112, 3162, 4107-4110; KOR 3111, 3112, 3162, 4107-08; LATN 3001, 3002; MUS 1103-1108, 2105, 2106, 2109, 2110, 2111, 2121, 2122, 3126, 3127, 3175; PHIL (not 2045, 2131); PSTD (all); PSYC 3945; REL (all); SLAV 1391, 1392, 2015, 2016, 2365, 2366, 2471-2474, 2785, 2786; SMPA 2177; SPAN 3100, 3210, 3220, 3300, 3410, 3420, 3500, 3510, 3520, 3530, 3560, 3570, 3580, 3600, 3700, 4410, 4510, 4540, 4550, 4560, 4600; TRDA 1015, 1025, 2191, 2240, 3245, 3246; WSTU (all)**

**Foreign Language/  
Culture**

**ANTH 3701-3705, 3707-3709, 3804, 3805, 3814 AH 2101-2104, 2106, 2120, 2121, 2131, 2132, 2134, 2135, 2160, 2190, 2191 CHIN 3111, 3112, 3136, 3162; CLAS 81/?, 2112, 2113, 2803, 2804, 3101, 3102, EALL 1075, 3811, 3814, 3821, 3831 FREN 3300 ITAL 3300 SPAN 3300 GER 2091, 2092, 2161, 2162, 2165 GEOG 3154, 3161, 3164, 3165 HIST 2112, 2113, 2803, 2804, 3060, 3061, 3118, 3140, 3141, 3145, 3150, 3160, 3173, 3178, 3180, 3181, 3501, 3540, 3610, 3611, 3615, 3621, 3636, 3710, 3711, 3810, 3811, 3820, 3840, 3640 JAPN 3111, 3112, 3162; KOR 3111, 3112, 3162; MUS 1107; PSC 2330, 2331, 2366, 2369-2371, 2373, 2374, 2377, 2379, 2381, 2383, 2476 REL 2141, 3201, 3211, 3214, 3231, 3401, 3414, 3431, 3475, 3501, 3514, 3562, 3601, 3814, 3811, 3821, 3831, 3989, 0771, 186/?; SLAV 1391, 1392, 2361, 2362, 2365, 2366, 2785, 2786 SPHR 1081, 1082;**

# Curriculum Requirements

## Cell and Molecular

- 2202 - Cell Biology (3)
- 2206 - Special Topics in Biochem (2)
- 2207 - Genetics (3)
- 2208 - Genetics Laboratory (1)
- 2213 - Biology of Cancer (3)
- 2214 - Developmental Biology (4)
- 3209 - Molecular Biology (4)
- 3210 - Nanobiotechnology (3)
- 3211 - Nanobiotechnology lab (1)
- 3212 - Immunology (3)
- 3261 - Cell Biochemistry (4)
- 3262 - Cell Biochemistry lab (2)
- 3263(W) - Special Topics in Biochemistry (3)

## Suborganismal and Organismal

- 2305 - Plant Biology (3)
- 2318 - Histology (4)
- 2322 - Human Physiology (3)
- 2323 - Human Physiology Lab (1)
- 2330 - Invertebrate Zoology (4)
- 2332 - Comparative Vertebrate Anatomy (4)
- 2337 - Introductory Microbiology (4)
- 2339 - Parasitology (4)
- 2340 - Taxonomy of Flowering Plants (4)
- 3320 - Human Neurobiology (3)
- 3321 - Comparative Endocrinology (3)
- 3325 - Environmental Physiology (3)

## Ecology and Evolution

- 2450 - Organic Evolution (3)
- 2451 - Paleontology (3)
- 2452 - Animal Behaviour (3)
- 2454 - General Ecology (4)
- 2455 - Plant Ecology (4)
- 2458 - Field Botany (4)
- 2467 - Marine Biology (3)
- 3456 - Animal Ecology (4)
- 3457 - Aquatic Ecology (4)
- 3460 - Conservation Biology (3)
- 3461 - Plant - Animal Interactions (3)
- 3462 - Plant-Animal Interactions Laboratory (1)
- 3463 - Ecological & Evolutionary Genetics (3)

# Electives

Systems Electives	Quantitative Electives	Organisms Electives	Evolution, Ecology and Environment
<p>BISC 2208 Genetics Lab* (1)            BISC 2213 Biology of Cancer (3)            BISC 2214 Developmental Biology (3)            BISC 2215 Genome Editing Lab* (1)            BISC 2220 Developmental Neurobiology (3)            BISC 2320 Neural Circuits and Behavior (3)            BISC 2583 Biology of Proteins            BISC 3165 Biochemistry (3)            BISC 3262 Biochemistry Lab* (2)            BISC 3263 Special Topics in Biochemistry * (2)            BISC 3208 Molecular Biology Lab* (1)            BISC 3209 Molecular Biology (3)            BISC 3210 Nano-biotechnology (3)            BISC 3211 Nano-biotechnology Lab* (1)            BISC 3212 Immunology (3)            BISC 3213 Applied Immunology (3)            BISC 3320 Human Neurobiology (3)            BISC 3122 Human Physiology (3)            BISC 3123 Human Physiology Lab* (1)            BISC 4132 Adv Topics Cell and Molecular Biology (3)            BISC 6205 Topics in Cell and Molecular Biology (1)            BISC 6218 Innate Immunity (3)            BISC 6219 Host Microbe Interactions (3)</p>	<p>MATH 1231 Single Variable Calculus I (3)            MATH 1232 Single Variable Calculus II (3)            STAT 1091 Principles – Statistical Methods (3)            STAT 1127 Statistics for the Biological Sciences (3)            BISC 2584 Introduction to Bioinformatics (3)</p>	<p>BISC 2000 Wonders of Biodiversity (3)            BISC 2330 Invertebrate Zoology* (4)            BISC 2331 Insect Biology (3)            BISC 2332 Comparative Vertebrate Anatomy* (4)            BISC 2333 Evolution and Extinction of Dinosaurs (3)            BISC 2334 Integrative Biology of Fishes (3)            [also a WID course]            BISC 2335 Insect Biology Lab* (1)            BISC 2337 Introductory Microbiology* (4)            [also a WID course]            BISC 2339 Parasitology* (4)            BISC 6215 Vertebrate Phylogeny* (4)            BISC 6249 Seminar in Developmental Biology (1)</p>	<p>BISC 2451 History of Life (3)            BISC 3450 Evolutionary Medicine (3)            [also as a WID course]            BISC 2452 Animal Behavior (3)            BISC 2453 Animal Behavior Lab* (1)            BISC 2454 General Ecology (3)            BISC 2456 General Ecology Lab* (1)            BISC 3458 Plant Comparative Structure and Function (3)            BISC 3459 Field Biology* (4)            BISC 3460 Conservation Biology (3)            BISC 3461 Plant-Animal Interactions (3)            BISC 3461 Plant-Animal Interactions Lab* (1)            BISC 3464 Ecology and Evolution of Societies (3)            BISC 6210 Methods of study of Evolution(3)            BISC 6211 Biogeography/Coevolution</p>



**Molecular Biology - BISC**  
**3209 Fall 2016**  
**SYLLABUS**

Tues & Thurs, 2:20-  
3:35

Elliott School of International Affairs B12,  
1957 E Street  
Course CRN: 10043  
3 Credits

**INSTRUCTOR**

Name: Dr. Mollie Manier  
Campus Address: SEH 6000 (mail), SEH 6680  
(office) Phone: 202-994-0126

E-mail:

[manier@email.gwu.edu](mailto:manier@email.gwu.edu)

Website: [manierlab.com](http://manierlab.com)

Office hours: Tues, Thurs 1-2 (**or by appointment**), SEH 6680. I know that some of you will not be able to make my office hours. If that is the case, I will be happy to meet with you at another time, even on a weekly basis. I will ask you if you would like a private meeting or if you are okay with other students joining – either option is fine.

**COURSE DESCRIPTION**

This course provides a comprehensive overview of concepts and technologies in genetics. Topics include chromosome structure and rearrangements, meiosis, Mendelian and non-Mendelian inheritance, pedigree analysis, linkage mapping, organellar genetics, DNA structure and replication, RNA and protein synthesis, regulation of gene expression, bacterial and viral genetics, transposable elements, genomics, population genetics, quantitative genetics, evolutionary genetics, and methods in recombinant DNA technology, gene characterization and genomics.

**COURSE PREREQUISITES**

Organic Chemistry (BISC 1111 and BISC 1112); One of the following is strongly recommended: Biochemistry (BISC 3261), Genetics (BISC 2207), Cell Biology (BISC 2202)

**TEXTBOOK**

Authors: David P. Clark, Molecular Biology; 2nd Edition, Academic Press (Elsevier), 2012, ISBN: 978-0-12-378594-7

You can also rent a digital copy of the textbook here:

<https://www.vitalsource.com/products/genetics-a-conceptual-approach-pierce-benjamin-a-v9781464150944>

**LEARNING OUTCOMES**

After completing this course, students should be able to:

1. You will gain an understanding of chemical and molecular processes that occur in and between

cells. Your understanding will become such that you will be able to describe and explain processes and their meaning for the characteristics of living organisms.  
 2. You will gain insight into the most significant molecular and cell-based methods used today to expand our understanding of biology.

**GRADING** (subject to change)

- Quizzes: 10%
- Worksheets: 10%
- Midterm 1: 25%
- Midterm 2: 25%
- Final Exam (cumulative): 30%

Letter grades are established from percentages of points earned out of total points possible following

**standard GWU guidelines** according to the following scale:

A	93-100%	C	73-76%
A-	90-92%	C-	70-72%
B	87-89%	D+	67-69%
B+	83-86%	D	63-66%
B-	80-82%	D-	60-62%
C	77-79%	F	<60%
C+			

1. Quizzes will be administered on Blackboard and will be available between the end of Thursday's lecture until the beginning of the following Tuesday's lecture. I will notify you when the week's quiz is available on Blackboard. **Quizzes are closed notes.**

Quizzes will cover the previous week's lectures (Tuesday and Thursday). You will have a limited time to complete the quiz and you may only take it once. To take the quiz, make sure you are somewhere with a strong internet connection. **If you experience technical difficulties while trying to take the quiz, let me know.**

2. Worksheets will cover a week's lectures (like quizzes) and will be due at the beginning of Tuesday's lecture. HALF CREDIT WILL BE GIVEN FOR LATE ASSIGNMENTS without PRIOR approval from the professor. **Worksheets are open notes.**

Part of the worksheets will require you to write and submit a potential exam questions and the answer on PeerWise ([https://peerwise.cs.auckland.ac.nz/at/?gwu\\_edu](https://peerwise.cs.auckland.ac.nz/at/?gwu_edu)). On PeerWise, you will be able to submit potential exam questions, answer other students' questions, rate other questions, and earn badges by participating.

3. Exams:
  - The first mid-term exam covers the first 8 lectures.

- The second mid-term exam covers lectures 9-17.
- The last exam will be cumulative but will focus primarily (1/2 to 2/3) on the material since the second midterm (lecture 18-26).
- All exams will be open book/notes, and use of the internet is allowed. However, you still need to study and memorize material to the degree you can, to save time looking things up during the exam, because it will be long.
- Exam questions will require *thoughtful synthesis* of material beyond basic identification of principles and processes. You must therefore *really know and understand* the material to do well on the exams.
- Exams may be made up only in the event of a crisis or emergency. If you will have a scheduling conflict with any exam, **notify me the first week of class.**
- University policy allows rescheduling of an exam if three or more exams are scheduled for the same day. If this means you, **you must notify me to reschedule the first week of class.**

NOTE: IN ACCORD WITH UNIVERSITY POLICY, THE FINAL EXAM WILL BE GIVEN DURING THE FINAL EXAM PERIOD AND NOT THE LAST WEEK OF THE SEMESTER

### **BLACKBOARD**

Copies of slides, worksheets, lecture notes, relevant articles from the primary and popular literature, and other materials presented or assigned in lectures will be made available on Blackboard. Slides will be available before the lecture, and printouts of the lecture notes will be available in lecture.

### **SUGGESTIONS FOR DOING WELL**

#### **Lectures**

- Come to lectures (and participate). You will not get an A if you do not come to class. Guaranteed.
- Ask lots of questions! Questions tell me you are thinking, and thinking is critical to doing well. Especially critical thinking. Ask yourself - does this make sense? If not, say so! Your question can be as simple as "Can you repeat that?" Or "I'm confused about this." Or "That doesn't make sense to me."
- Take good notes during classes. Avoid taking notes on your laptop whenever possible. Physically writing down your observations forces you to synthesize what I'm saying and helps your brain retain and understand more. I will provide detailed notes of the lectures, so you have a backup in case you miss something. However, it is in your best interest to take your own notes as well.

#### **Textbook**

- Get the textbook. It is very good at explaining concepts, and if something didn't make sense in lecture (and you didn't ask a question about it), reading that section of the book can help clarify things.
- Read book chapters or notes before *and* after attending lectures (and take the time to read them well).
- Do practice problems at the end of chapters. There are three types of practice problems: Comprehension Questions, Application Questions and Problems, and Challenge Questions. Work through all three.
- Comprehension Questions make sure you know what you need to know. Application Questions ask you to apply what you know. These are especially



### **COMMON COURTESY ISSUES**

In order to make the learning environment positive and productive, please show common courtesy to your instructor and classmates. These include turning off your cell phone when you come into class, arriving on time to minimize disruption, and refraining from e-mailing and websurfing during class. YOU WILL NOT DO WELL IF YOU DO NOT COME TO CLASS.

### **POLICY ON RELIGIOUS HOLIDAYS**

Students should notify me by **Thursday, Sept. 3** of their intention to be absent from class due to religious observance.

### **ACADEMIC INTEGRITY**

I personally support the GW Code of Academic Integrity: "Academic dishonesty is defined as cheating of any kind, including misrepresenting one's own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information."

For the remainder of the code, see: <http://www.gwu.edu/~integrity/code.html>

Any student found guilty of violating the rules for academic integrity will, at a minimum, be awarded a grade of "F" for the assignment and/or the course. A report will also be filed with the Administration who will decide if further disciplinary action is warranted.

### **SUPPORT FOR STUDENTS OUTSIDE THE CLASSROOM**

#### *DISABILITY SUPPORT SERVICES (DSS)*

Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Marvin Center, Suite 242, to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to: <http://gwired.gwu.edu/dss/>. Please see me if you have any questions.

#### *UNIVERSITY COUNSELING CENTER (UCC) 202-994-5300*

The University Counseling Center (UCC) offers 24/7 assistance and referral to address students' personal, social, career, and study skills problems. Services for students include:

- Crisis and emergency mental health consultations.
- Confidential assessment, counseling services (individual and small group), and referrals.

<http://gwired.gwu.edu/counsel/CounselingServices/AcademicSupportServices>

**COURSE SCHEDULE** (Subject to change):

<b>Lecture</b>	<b>Date</b>	<b>Topic/Activity</b>	<b>Chapters</b>
1	8/30	Basic Genetics	Ch. 1
2	9/1	Cells and Organisms	Ch. 2
3	9/6	DNA, RNA and Protein	Ch. 3
4	9/8	Genes, Genomes and DNA	Ch. 4
5	9/13	Cell Division and DNA Replication	Ch. 5
6	9/15	Transcription of Genes	Ch. 6
7	9/20	Protein Structure and Function	Ch. 7
8	9/22	Protein Synthesis	Ch. 8
9	9/27	Regulation of Transcription in Prokaryotes	Ch. 9
	9/29	<b>Midterm #1</b>	
10	10/4	Regulation of Transcription in Eukaryotes	Ch. 10-11
11	10/6	Regulation at the RNA Level	Ch. 12
12	10/11	Processing of RNA	Ch. 13
13	10/13	Mutations	Ch. 14
14	10/18	Recombination and Repair	Ch. 15
15	10/20	Mobile DNA	Ch. 16
	10/25	FALL BREAK	
16	10/27	Plasmids	Ch. 17
	11/1	<b>Midterm #2</b>	
17	11/3	Viruses	Ch. 18
18	11/8	Bacterial Genetics	Ch. 19
19	11/10	Diversity of Lower Eukaryotes	Ch. 20
20	11/15	Molecular Evolution	Ch. 21
21	11/17	Nucleic Acids: Isolation, Purification, Detection, and Hybridization	Ch. 22
	11/	NO CLASS	

# Laboratory topics

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<b>Week</b>	<b>Date</b>	<b>Topic/Activity</b>
1	1/14	Introduction to annotation
2	1/21	Annotation
3	1/28	Annotation; introduction to poster presentation and reports
4	2/4	Annotation
5	2/11	Annotation; draft of poster due
6	2/18	Annotation; submitting the annotation report
7	2/25	Annotation poster presentations; reports due 2/27
8	3/4	Primer design
9	3/9-3/13	SPRING BREAK
10	3/18	DNA extraction
11	3/25	PCR
12	4/1	Gel electrophoresis
13	4/8	Transformation
14	4/15	Select colonies, PCR
15	4/22	Sequence data
	4/19	Lab reports due

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# Laboratory topics

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Lab	Subject
1.	The components of nucleic acids.
2.	DNA replication.
3.	Transcription.
4.	RNA.
5.	Preparation of vegetable protein solution and study of its properties.
6.	Isolation and study dezoribonukleoproteidov properties.
7.	Structure of eukaryotic genomes.
8.	Genome prokaryotes.
9.	Types and causes of mutations.
10.	Repair of DNA damage.
11.	The concept of the operon.
12.	Genetics of prokaryotes.
13.	Viral carcinogenesis.
14.	Nucleic acid hybridization.
15.	Vectors used in genetic engineering.



# The main virtual laboratory

SimUText

MY NOTES MY WORK HOME

## Mitosis

### Spindle Forces

The simulation to the right lets you experiment with the spindles. This time, the spindles won't attach to the chromosomes without your help.

Press **Pause** to stop the simulation.

Click the end of one fiber from the left spindle and drag it to the green chromosome to attach it. The spindle fiber will turn orange when it grabs a kinetochore. Similarly, attach one fiber from the left spindle to the blue chromosome.

Press **Play** to resume the simulation.

**Q19. Do spindle fibers push or pull chromosomes?**

Push  Pull

**Check Answer**

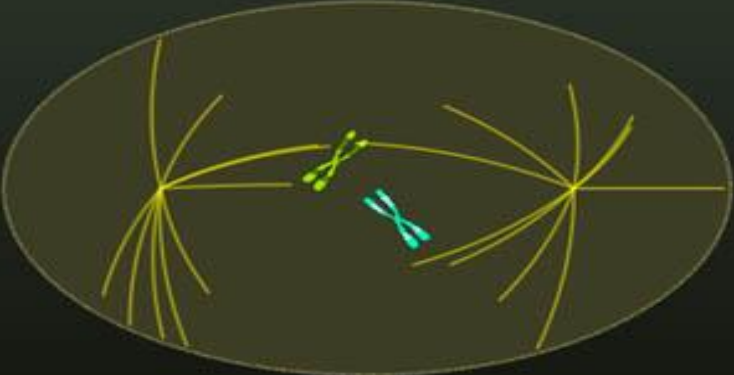
Now, **Pause** the simulation and attach each chromosome to both spindles. Then **Play** the simulation.

**Q20. Why do chromosomes move to the midline when attached to both spindles?**

Both spindles push on the chromosome, centering it at midline.

One spindle pushes on the chromosome, the other pulls, moving it towards the center.

Both spindles pull on the chromosome, in a tug of war.



**PAUSE** **RESET**

Experiment with spindle behavior and attachment. As before, mitosis will not proceed past metaphase.

To attach spindles to chromosomes:  
**Pause** the simulation.  
Drag ends of spindle fibers to chromosome kinetochores.  
**Play** the simulation.  
**Reset** to start over.

Go to... SECTION 3. Molecular Machinery of Mitosis 5/15



# Virtual laboratory of the teacher

The screenshot displays the SimUtext virtual laboratory interface for Mendelian Pigs. The main window is titled "MATE-O-MATIC™ PATENT PENDING" and shows a breeding experiment in progress. The name of the current experiment is "Pure Black x Pure Brown".

At the top, there are two parent pig icons labeled "PARENT A" (black) and "PARENT B" (brown). A central "Mate 'Em!" button is positioned between them. Below the parents, several small pig icons represent the offspring.

A bar graph titled "Offspring" shows the count of offspring for different phenotypes. The y-axis is labeled "Count" and ranges from 0 to 20. The x-axis shows six pig icons representing different phenotypes. The counts are: 0 for the first phenotype (black), 19 for the second phenotype (black), 0 for the third phenotype (black), 0 for the fourth phenotype (brown), 0 for the fifth phenotype (brown), and 0 for the sixth phenotype (brown).

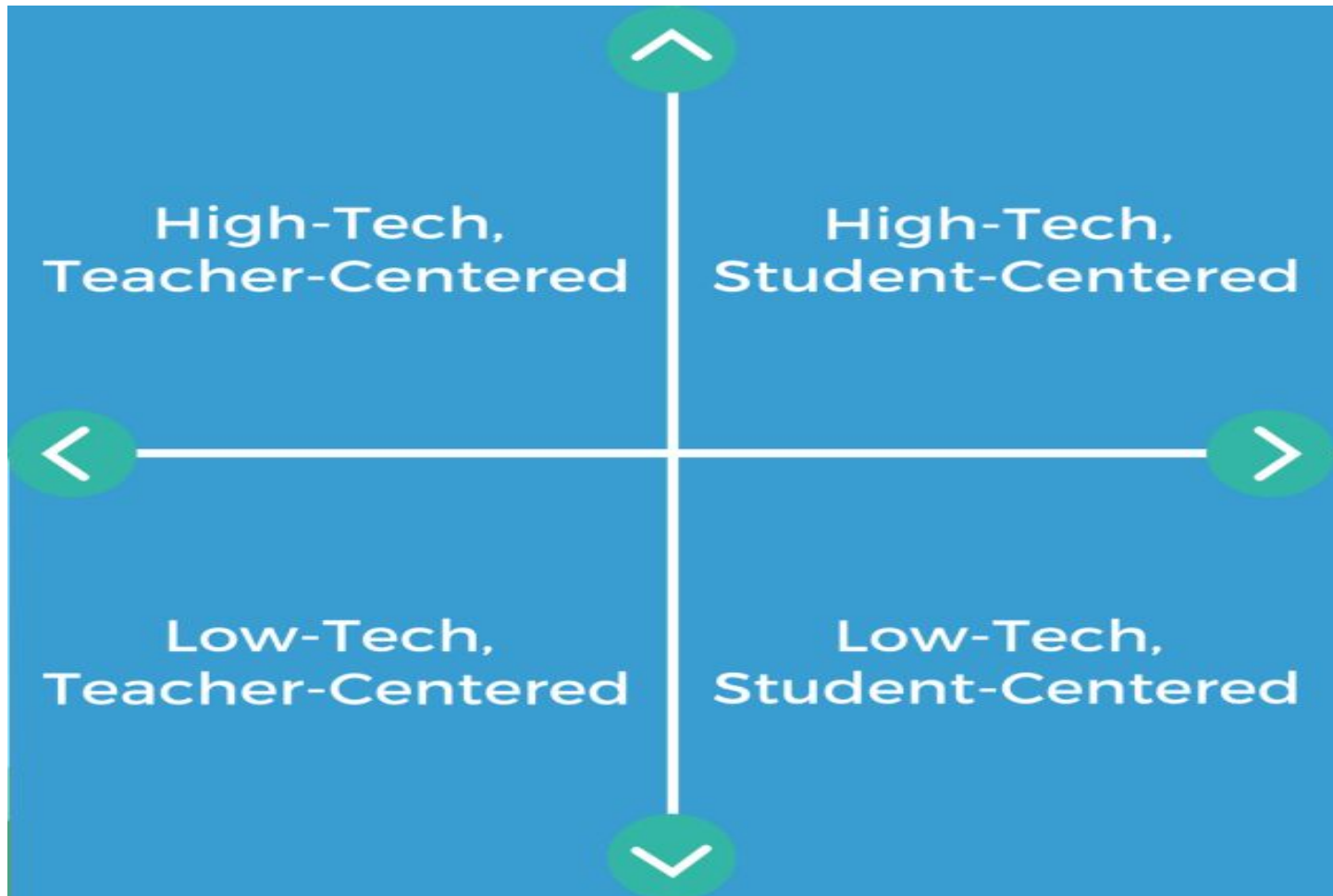
At the bottom of the graph, there are three buttons: "Clear Offspring", "Hide", and "Delete".

The background of the interface shows a virtual farm with various pig populations. On the right, there is a "MY WORK" panel with a "HOME" button. The panel displays "My Mate-O-Matics" and lists the current experiment: "Pure Black x Pure Brown". A "NEW" button is visible below the list.

The bottom status bar shows the current time as "275 Months" and includes navigation controls.

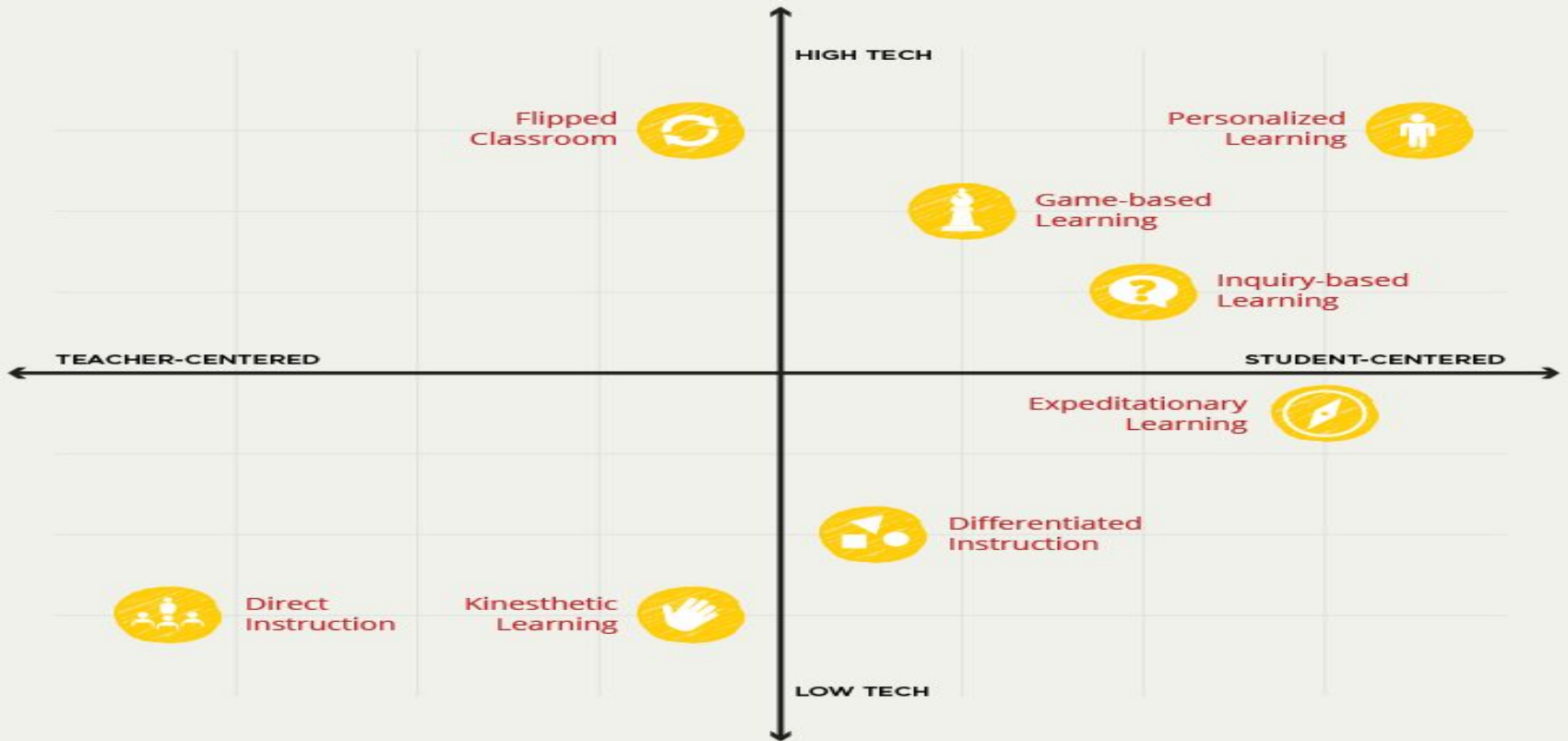
# Methods of teaching in GWU

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# TEACHING METHODS:

## TECH VS. TEACHER/STUDENT CENTEREDNESS





silverwolf

Noob

System XP 1950

Group

0 | 2400

Rank

0 | 164

Pre-Algebra 1

Available 11

In Progress 0

Completed 0

Name	XP	Avg Time	Rating	Category	Due Date
<b>Algebra Activity</b>	15	15 mins	★★★★★	Slope-Intercept	No end date
<b>Buzzmath: Slope-Intercept</b>	70	30 mins	★★★★★	Slope-Intercept	No end date
<b>Glencoe quizzes: Slope and Slope-intercept</b>	45	63 mins	★★★★★	Slope-Intercept	No end date
<b>Graphing linear equations pathway</b>	50	65 mins	★★★★☆	Slope-Intercept	No end date
<b>Khan Academy: Slope-Intercept form</b>	15	28 mins	★★★★	Slope-Intercept	No end date



QUESTS 0

REWARDS 0

GROUP

ANNOUNCEMENTS 5

GROUP MANAGER

QUEST BUILDER

REWARD BUILDER

QUEST APPROVER (3)





## Биология 8С



Nazerke Kazhalaeva

Выбрать тему  
Загрузить фото

Показать  
удаленные  
элементы



Учащиеся могут  
публиковать записи и  
оставлять  
комментарии

### Добро пожаловать в ленту курса!

Здесь будут задания и записи курса.



Вы можете добавить материалы в любую запись.

Видео YouTube



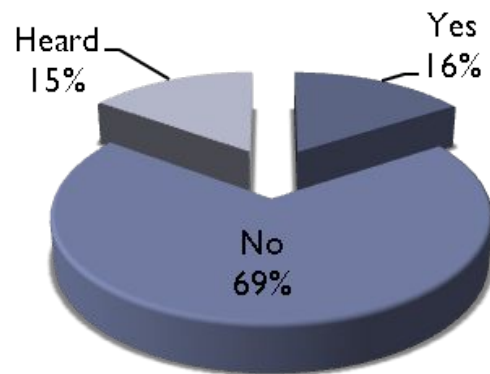
Разрешите учащимся смотреть или редактировать материалы либо сохранять копии на своем Диске

Google Документы

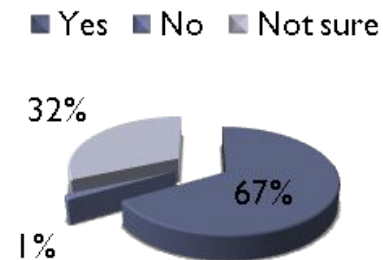


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### Do you know what Blackboard Learn is?



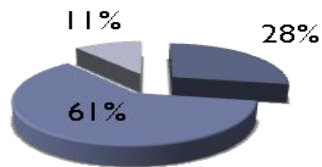
### Do we need such as a system of educational in schools and other educational institutions?





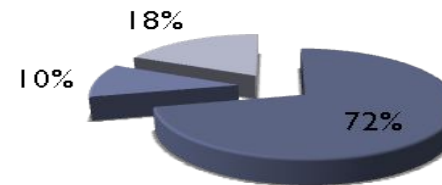
**Do you ready to look for materials about a given topic in books/in the Internet, or is it convenient for you...**

■ By the look ■ Ready material ■ Still.



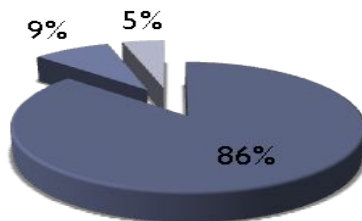
**Would you like to pass exams through an electronic device(phone, computer,etc)?**

■ Yes ■ No ■ Still.



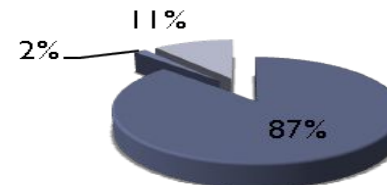
**Would you like to learn material through games?**

■ Yes ■ No ■ Still.



**Would you like to know your test results right after you pass?**

■ Yes ■ No ■ Still.



# CONCLUSION

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- 1. In 2016-2018, we analyzed the features of the education system of Kazakhstan and the United States, as well as a comparative analysis of curricula of biological disciplines of West Kazakhstan state University. M. Utemisov and G. Washington University.





- 2.WKSU curricula in the credit system of education consists of three cycles of disciplines: General education disciplines (GED); the cycle of basic disciplines (DB); a cycle of profile disciplines (PD).
  - For each specialty created work plans with the name of the modules, with the cycle of the subject, the code, the name of the discipline, the language of instruction and the number of credits. The total number of credits for General and specialty is 129. 28 credits total compulsory disciplines and 101 credits for the major.
  - Obligatory condition of completion of the bachelor is getting the 129 credits student learning. Of these, the cycle of General subjects -28, a cycle of basic disciplines -69 and a cycle of core disciplines -32.
  - The curricula of GWU include General subjects and disciplines in the specialty. In General the discipline a student chooses 2-3 of the object for 7 different categories. In the disciplines of the specialty as several subjects in three different categories. For each discipline you need to get a certain number of credits.
  - In GWU on a cycle of obligatory disciplines -60 and on a cycle of profile disciplines -60.
  - In wksu load falls on natural Sciences -54%, Humanities -19%, foreign languages -19%, social Sciences -8%. Compared to GW, in WKSU them. M. Utemisov there are some blocks of disciplines. For example, literacy, quantitative and logical reasoning and art.
  - In GW, the burden is also on natural Sciences (20%), Humanities -20%, literacy -17%, social Sciences -15%, foreign languages -13%, reasoning (mathematical disciplines) -10%, art (5%).
- 



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- 3. In order to introduce high-tech teaching methods in the educational process of Nazarbayev Intellectual School, we used the technical tools of G Suite, Google Hangouts, Google classroom, YouTube, Twig-bilim, Kahoot, Plickers, Quizzlet, which are widely used in American schools and universities.



# Suggestion:

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- 1. To introduce them into the educational process of wksu. M. utemisova Blackboard Learn system;
- 2. Start additional courses of bioinformatics for students of I-II courses;
- 3. Create virtual laboratories of the faculty of natural geography;
- 4. Use different software Gamification and social media platforms focused on education.



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***Thank you for listening***

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UNIVERSITY  
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