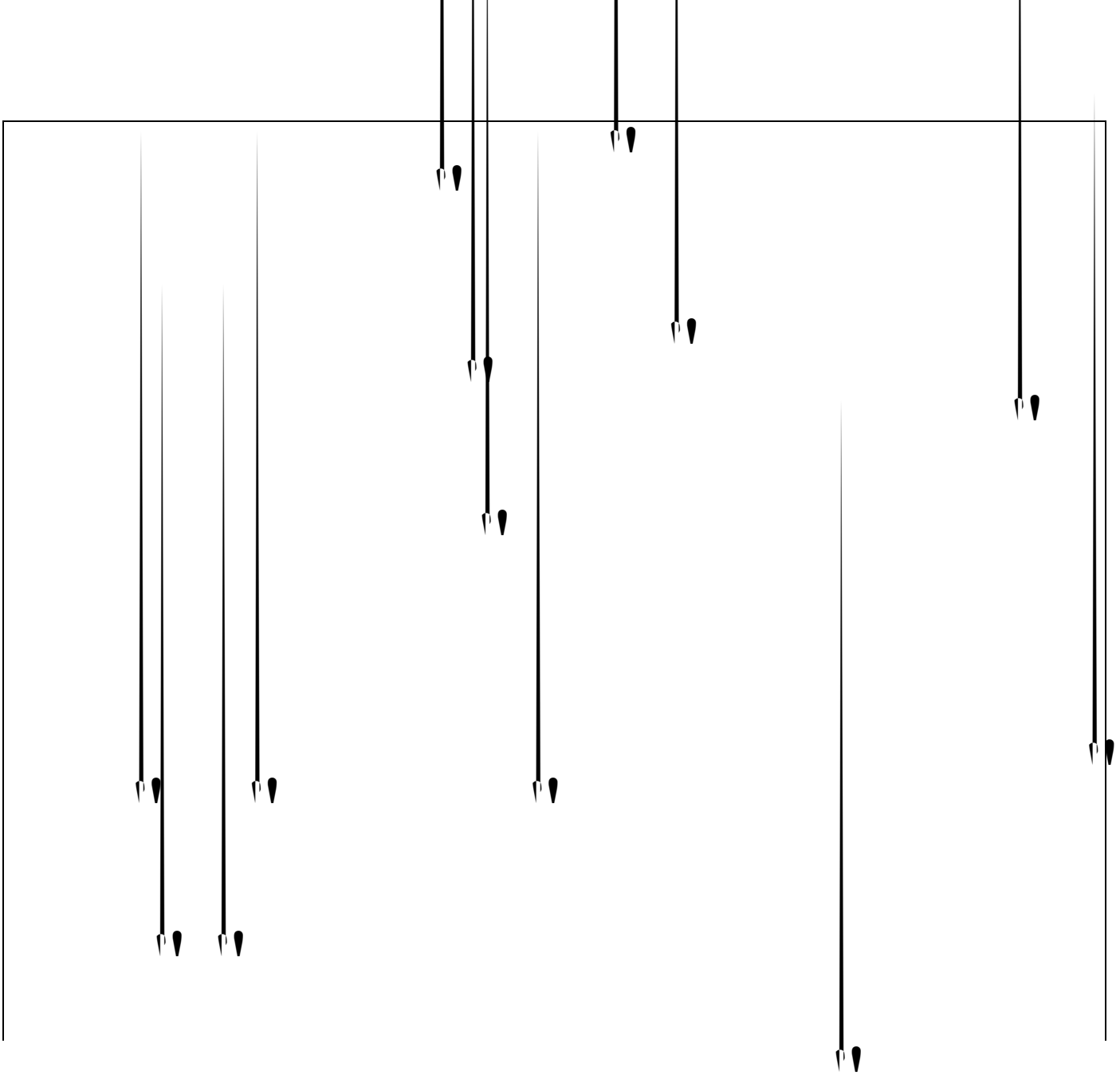
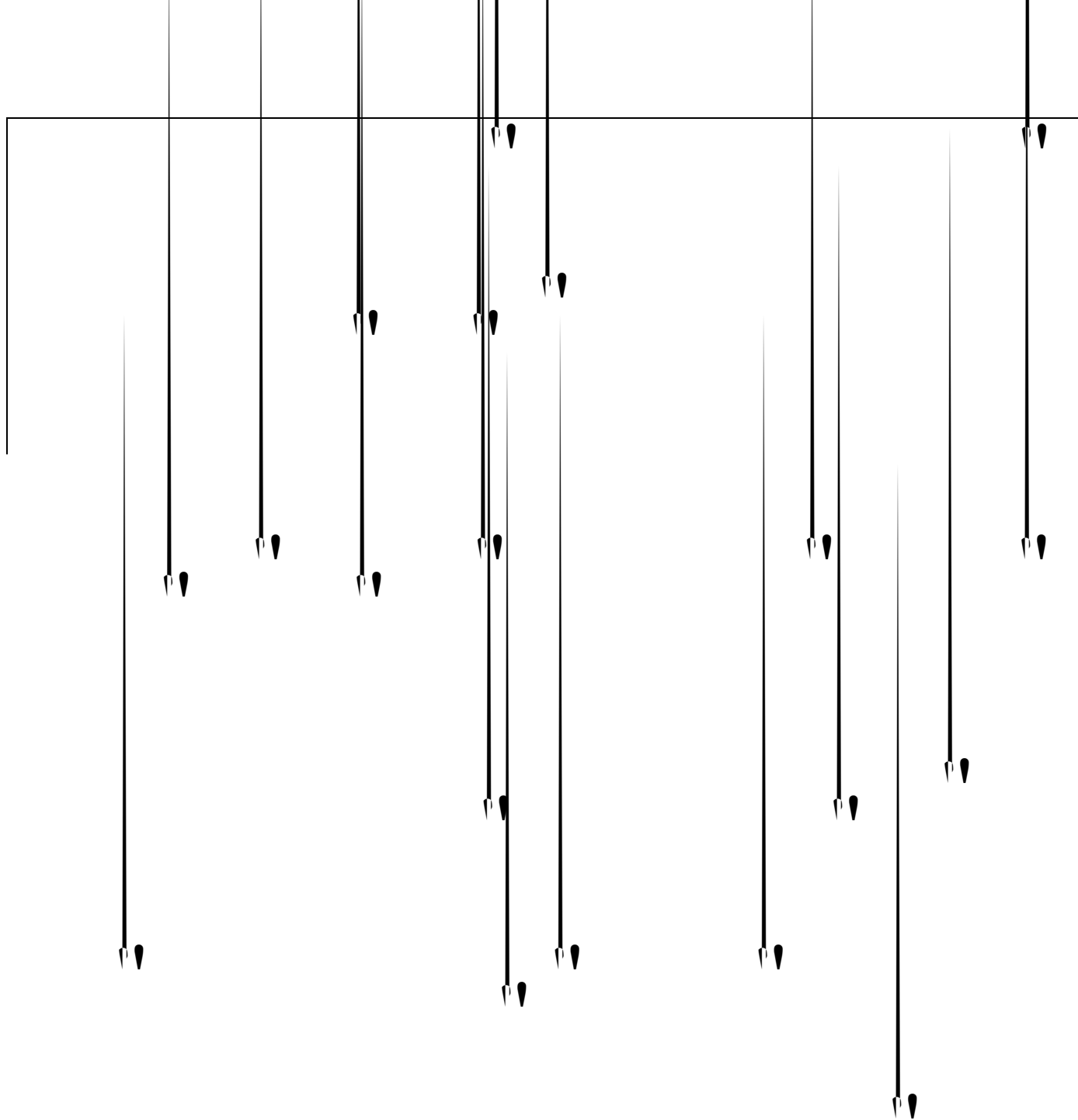
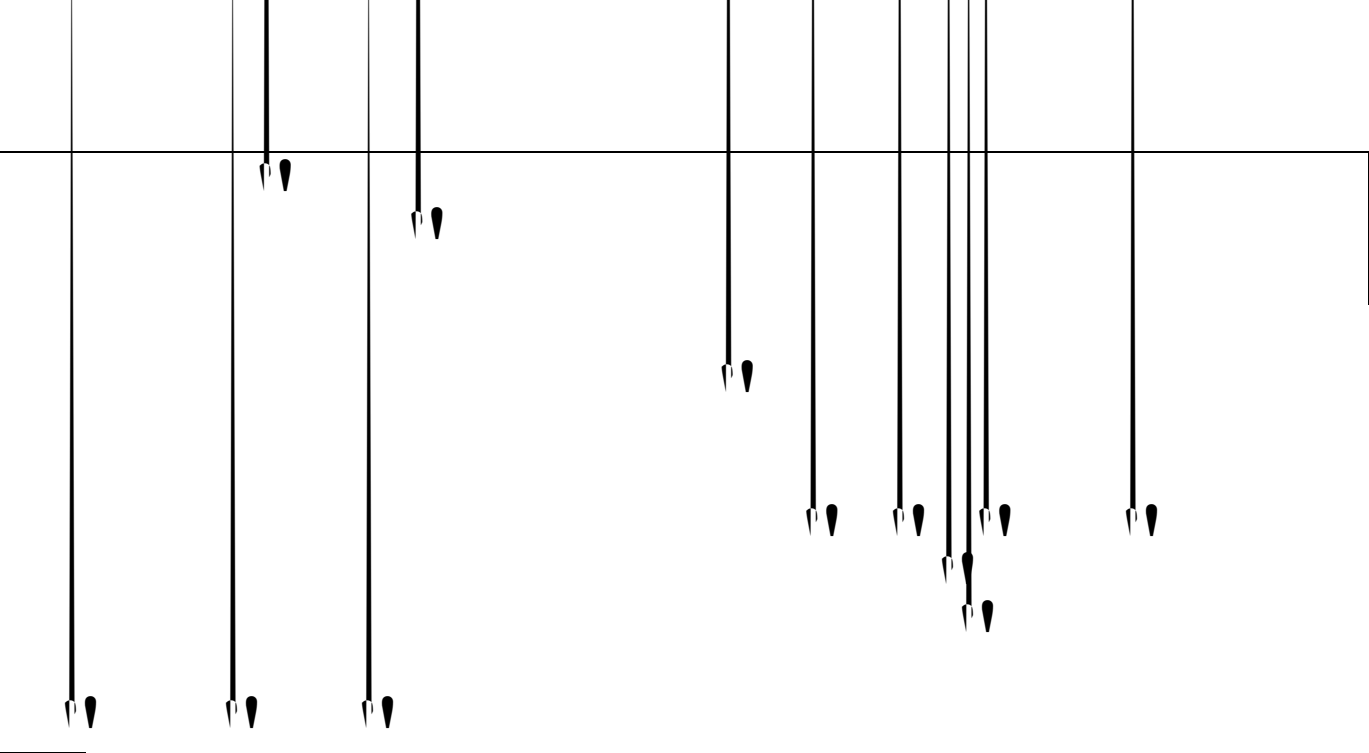


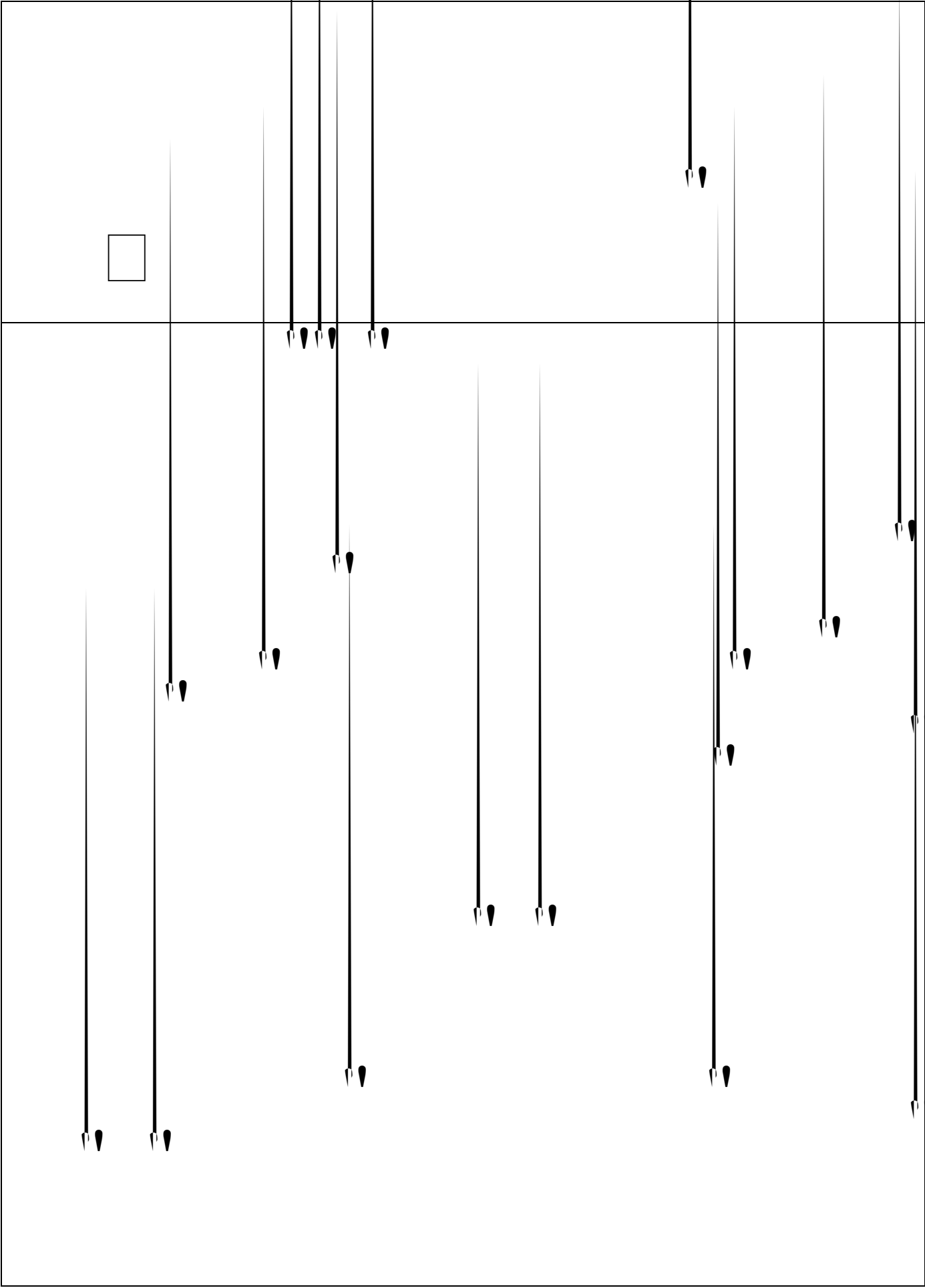
For entrants in FY 2020

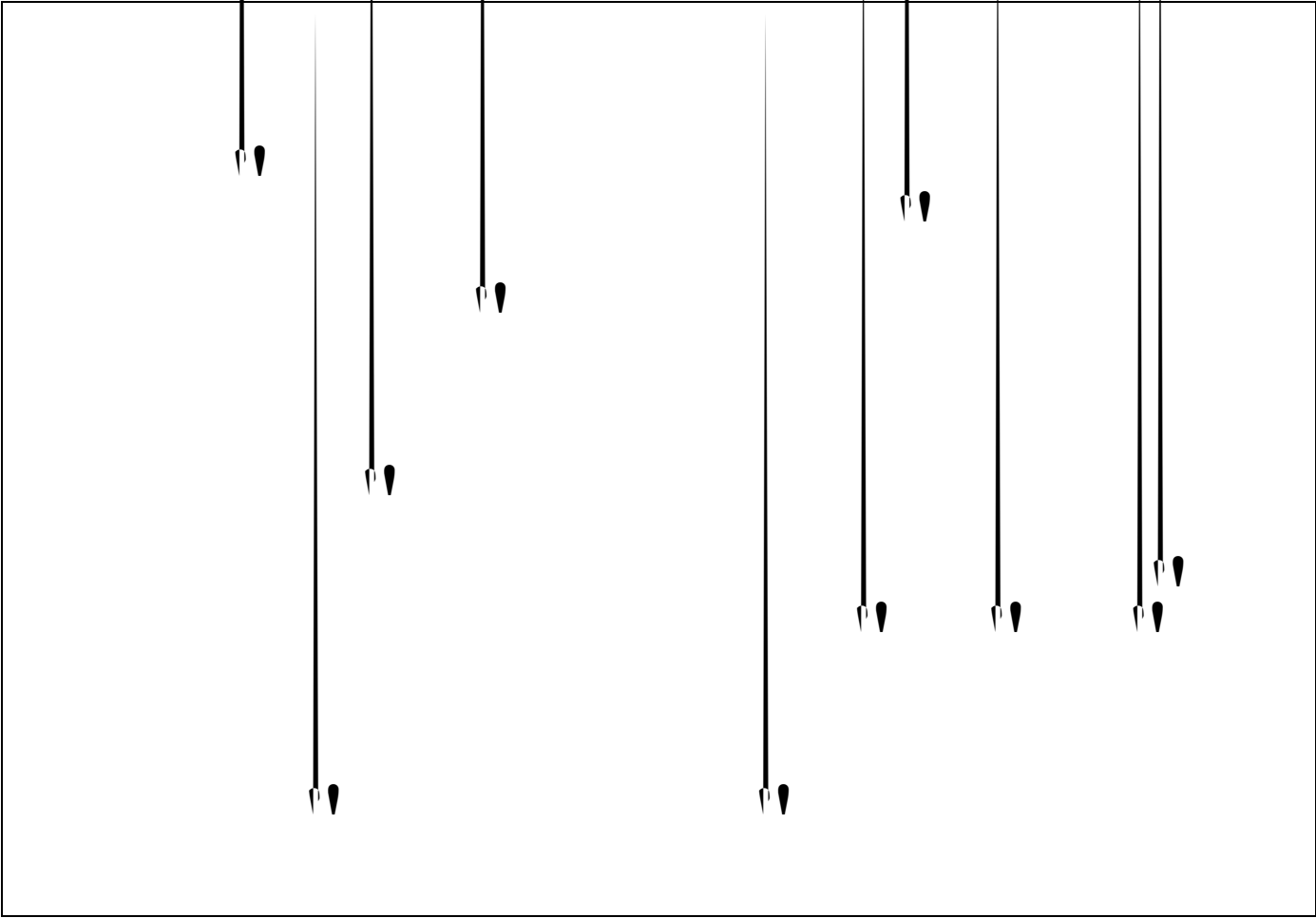
The image shows a single staff of music with five horizontal lines. The notation is minimalist, using vertical stems and small black flags to represent notes. The staff is divided into measures by vertical bar lines. The notation is sparse, with many empty spaces between the notes. The notes are positioned at various heights on the staff, suggesting different pitches. The overall style is graphic and abstract, focusing on the visual arrangement of the notes rather than traditional musical notation.











Type	Subject type			Required No. of credits	Class subjects	No. of credits	Type of course registration	Year in which the subject is taken							
								1 st grade		2 nd grade		3 rd grade		4 th grade	
								Springs	Fall	Springs	Fall	Springs	Fall	Springs	Fall
Liberal Arts Education	Peace Science Courses			2		2	Required								
	Basic Courses in University Education	Introductory Seminar for First-Year Students		2	Introductory Seminar for First-Year Students	2	Required								
		Introduction to University Education		2	Introduction to University Education	2	Required								
		Common Subjects	Foreign Languages	English(Note2)	Basic English Usage	2	Communication Basic I	1	Required						
	Communication Basic II						1								
	Communic ation I			2	Communication I A	1	Required								
					Communication I B	1									
	Communic ation II			2	Communication II A	1	Required								
					Communication II B	1									
	Non-English Foreign Languages (Select one language)		4	Basic Foreign Language I	1	Elective Required									
				Basic Foreign Language II	1										
				Basic Foreign Language III	1										
				Basic Foreign Language IV	1										
	Information, Data Science Courses		2	(Note3)	2	Required									
	Area Courses		9	(Note4)	1 or 2	Elective/ Required									
	Health and Sports Courses		2	(Note5)	1 or 2	Elective Required									
	Foundation Courses			14	Basic Calculus or Elements of Calculus (Note6)	2	Required								
					Organic Chemistry	2									
					Species Biology	2									
					Cell Science	2									
					General Chemistry or Basic Concepts of Chemistry (Note7)	2									
					4 subjects from	1 for	Elective								

		“Experimental Methods and Laboratory Work in Physics I”, “Experimental Methods and Laboratory Work in Physics II”, “Experimental Methods and Laboratory Work in Chemistry I”, “Experimental Methods and Laboratory Work in Chemistry II”, “Experimental Methods and Laboratory Work in Biology I”, “Experimental Methods and Laboratory Work in Biology II”(Note8)	each subject	Required									
	Total	44											

Note 1: The year indicated with a circle mark represents that in which students typically take the subject. The year with a double circle mark indicates the year in which students are highly recommended to take the subject. Students are allowed to take the subject in any year after that indicated with a circle or double circle mark. It is required to confirm the semester in which the subject is provided in the class schedule for liberal arts education subjects in the Students' Handbook because some subjects might be provided in different semester from that which is provided in this document.

Note 2: The credit for "Field Research in the English-speaking World" that is earned through such as a short-term study abroad and that for "Online English Seminar I," "Online English Seminar II," and "Online English Seminar III" that is earned through a self-study, are accepted as the credit for English required for graduation. Achievement in a foreign language skill test and language training might be accepted as a credit. For further information, refer to the description regarding English subjects in the liberal arts education and the item "Credit based on Achievement in Foreign Language Skill Test" in the Students Handbook.

(PP. 30 - 31, Liberal Arts)

Note 3: For the information, Data Science subject, it is required to take the subject "Elements of Information Literacy" that is provided in the first semester in the first year. Only when failing to earn the credit for "Elements of Information Literacy," is it allowed to take the subject "Exercise in Information Literacy" that is provided in the second semester in the first year.

Note 4: It is required to earn 4 credits or more for the natural science subjects and 4 credits or more for the human & social science subjects.

However, "Fundamentals of Biology" of the natural science subjects is a subject for which students are requested to take if he/she did not take biology subjects in the entrance exam (including the University Testing Center Examination).

For the other students, the credit for the subject "Fundamentals of Biology" is not accepted as that for graduation.

It is allowed to include up to 4 credits for society-related subjects as credits for the Human & Social Science Subjects.

Note 5: For health & sports subjects, it is recommended to take a practicum in sports.

Note 6: Students who studied Mathematics III in high school are required to take the subject "Basic Calculus." Students who did not study Mathematics III in high school are required to take the subject "Elements of Calculus."

Note 7: Students who did not take chemistry subjects in the entrance exam (including the University Testing Center Examination) are required to take the subject "Basic Concepts of Chemistry." For those students, the credit for the subject "General Chemistry" is not accepted for graduation.

For students who take chemistry subjects, the credit for the subject "Basic Concepts of Chemistry" is not

accepted for graduation.

Note 8: It is required to select two combinations of subjects from the following to earn credits for them: "Experimental Methods and Laboratory Work in Physics I" and "Experimental Methods and Laboratory Work in Physics II"; "Experimental Methods and Laboratory Work in Chemistry I" and "Experimental Methods and Laboratory Work in Chemistry II"; and "Experimental Methods and Laboratory Work in Biology I" and "Experimental Methods and Laboratory Work in Biology II."

Type	Subject type	Required No. of credits	Class subjects	No. of credits	Year in which the subject is taken								
					1 st grade		2 nd grade		3 rd grade		4 th grade		
					Springs	Fall	Springs	Fall	Springs	Fall	Springs	Fall	
		24	Introduction to Applied Biological Sciences	2									
			Introduction to Microbiology	2									
			Introduction to Molecular Biochemistry	2									
			Agricultural Production Resources	2									
			Physics for Applied Biological Science	2									
			Ethics of Science and Technology	2									
			Statistics in Biology	2									
			Environmental Sciences for Bioproduction	2									
			Laboratory Work in General Biology I	1									
			Laboratory Work in General Biology II	1									
			Laboratory Work in General Chemistry	1									
			Laboratory Work in General Physics	1									
			Required Subjects: Total 20 credits										

			Seminar in Field Science Research Front of Applied Biological Sciences Introduction to Physiology Public Health	2 2 2 2							
Elective Required Subjects Take 4 credits from above subjects (Redundant credits over 4 credits move to Elective Subjects in each Program)											

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Results of study in Food Science Program

Relation between evaluation items and evaluation criteria

	Excellent	Very Good	Good
(1) Ability for comprehensive and cross-disciplinary thinking and knowledge / understandings required to see a phenomena from a broad, top-down perspective and to take action for solving problems regarding the specialized area.	Has superior ability for comprehensive and cross-disciplinary thinking and capability to see a phenomenon from a broad, top-down perspective and to take action for solving problems regarding the specialized area.	Has sufficient ability for comprehensive and cross-disciplinary thinking and capability to see a phenomenon from a broad, top-down perspective and to take action for solving problems regarding the specialized area.	Has basic ability for comprehensive and cross-disciplinary thinking and capability to see a phenomenon from a broad, top-down perspective and to take action for solving problems regarding the specialized area.
(2) Basic knowledge and understanding required for acquiring expertise	Has fundamental knowledge and profound understanding required for acquiring expertise, and is capable of explaining this knowledge while associating it with items related to other areas.	Has fundamental knowledge and profound understanding required for acquiring expertise, and is capable of sufficiently explaining this knowledge while associating it with items related to other areas.	Has fundamental knowledge and profound understanding required for acquiring expertise, and is capable of providing basic explanation of this knowledge while associating it with items related to other areas.
(3) Basic knowledge of such as chemistry, biology, biochemistry, microbiology, physics, and mathematics required for understanding food science.	Capable of sufficiently applying the basic knowledge of such as chemistry, biology, biochemistry, microbiology, physics, and mathematics required for understanding food science.	Capable of applying the basic knowledge of such as chemistry, biology, biochemistry, microbiology, physics, and mathematics required for understanding food science.	Capable of generally applying the basic knowledge of such as chemistry, biology, biochemistry, microbiology, physics, and mathematics required for understanding food science.
(4) Expertise regarding methods for identifying the mechanism of function expression in food and food material and for application of the function.	Capable of providing practical explanation regarding methods for identifying the mechanism of function expression in food and food material and application of the function while associating it with knowledge of the other items.	Capable of providing explanation regarding methods for identifying the mechanism of function expression in food and food material and application of the function while associating it with knowledge of the other items.	Capable of providing basic explanation regarding methods for identifying the mechanism of function expression in food and food material and application of the function while associating it with knowledge of the other items.

u i n g	(6)	Expertise regarding production management and distribution of foods	Capable of providing practical explanation regarding production management and distribution of foods while associating it with knowledge of the other items.	Capable of providing explanation regarding production management and distribution of foods while associating it with knowledge of the other items.	Capable of providing explanation regarding production management and distribution of foods.
	(7)	Expertise regarding food processing technologies and development of useful materials.	Capable of providing practical explanation regarding food processing technologies and development of useful materials while associating it with knowledge of the other items.	Capable of providing explanation regarding food processing technologies and development of useful materials while associating it with knowledge in other fields.	Capable of providing basic explanation regarding food processing technologies and development of useful materials.
A b i l i t i e s & s k i l l s	(1)	Basic ability in communication, information processing, and physical activities required for acquiring expertise	Has superior ability in all the elements regarding communication, information processing, and physical activities required for acquiring expertise.	Has sufficient ability in all the elements regarding communication, information processing, and physical activities required for acquiring expertise.	Has basic ability in all the elements regarding communication, information processing, and physical activities required for acquiring expertise.
	(2)	Basic experimentation abilities and skills required for acquiring expertise	Has sufficient basic experimentation abilities and skills required for acquiring expertise, and is capable of autonomously applying them.	Has sufficient basic experimentation abilities and skills required for acquiring expertise, and is capable of autonomously applying them under instruction.	Generally has sufficient basic experimentation abilities and skills required for acquiring expertise, and is capable of supporting their execution.
	(3)	Basic techniques and methodologies for handling foods and food materials, ability to understand various phenomena regarding foods from scientific points of view, and capability of organizing the study result in a report	Has sufficiently and profoundly acquired basic techniques, methodologies, and understanding and is capable of sufficiently applying them. Also capable of logically organizing the result of research in a report and discussing it with others.	Has sufficiently acquired basic techniques, methodologies, and understanding and is capable of sufficiently applying them. Also capable of logically organizing the result of research in a report.	Has substantially acquired basic techniques, methodologies, and understanding and is capable of generally applying them. Also capable of organizing the result of research in a report.
	(4)	Acquisition of techniques for production of foods from marine and animal resources and capability of consideration of practical measures for conversion to safe and highly functional foods	Has sufficiently acquired techniques and knowledge regarding production of foods from marine and animal resources and is capable of fully considering practical measures.	Has acquired techniques and knowledge regarding production of foods from marine and animal resources and is capable of considering practical measures.	Has generally acquired techniques and knowledge regarding production of foods from marine and animal resources and is capable of considering practical measures.
	(5)	Capable of organizing and considering own issues to explore in the fields of food science from a social point of view based on experience of such as observation of a food manufacturing scene	Capable of applying findings and knowledge obtained in the observation of a food factory, lecture, and experiment to be conscious of the connection to the society and organizing and considering own issues to explore in the fields of food science by actively comparing the experience to that in the lecture and experiment in the university.	Capable of applying findings and knowledge obtained in the observation of a food factory, lecture, and experiment to be conscious of the connection to the society and organizing and considering own issues to explore in the fields of food science based on the experience.	Capable of applying findings and knowledge obtained in the observation of a food factory, lecture, and experiment to be conscious of the connection to the society and identifying own issues to explore in the fields of food science.

(6)	Ability to read and understand technical explanations and basic reading capabilities of scientific English	Capable of reading English texts and understanding technical explanations	Has a basic ability for reading English texts and capable of understanding technical explanations to some extent.	Has a basic ability for reading English texts and capable of partly understanding technical explanations
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Specialized subjects	Laboratory Work in Marine Bioresources Chemistry	1	Required	5th semester																	60	1	20	1	20	1						100
Specialized subjects	Laboratory Work in Nutritional Biochemistry	1	Required	5th semester																	60	1	20	1	20	1						100
Specialized subjects	Field Works of Food Production Management	1	Required	5th semester																	40	1			60	1						100
Specialized subjects	Reading of Foreign Literature in Food Science	2	Required	4th semester																							100	1				100
Specialized subjects	Science and Technology for Food Development	2	Elective required	4th semester											60	1									40	1						100
Specialized subjects	Food Function (Functional Food Science)	2	Elective required	5th semester						80	1	20	1																			100
Specialized subjects	Food Physical Property Science	2	Elective required	5th semester				40	1	40	1				20	1																100
Specialized subjects	Food Microbiology	2	Elective required	5th semester				60	1			40	1																			100
Specialized subjects	Bioresource Utilization Science	2	Elective required	5th semester						40	1				40	1							20	1								100
Specialized subjects	Food System	2	Elective required	5th semester										80	1										20	1						100
Specialized subjects	Agricultural Products and Food Processing	2	Elective required	5th semester				40	1	20	1	20	1										20	1								100
Specialized subjects	Training for Marine Food Processing	1	Elective required	5th semester											20	1							60	1	20	1						100
Specialized subjects	Training for Animal Food Processing	1	Elective required	5th semester											20	1							60	1	20	1						100
Specialized subjects	Food Factory Inspection	1	Elective required	5th semester																					100	1						100
Specialized subjects	Food Information Management	1	Elective required	7th semester										100	1																	100
Specialized subjects	Food Production Process Management	1	Elective required	7th semester							40	1	60	1																		100
Specialized subjects	Genome Science I	2	Elective	6th semester	50	1			50	1																						100
Specialized subjects	Genome Science II	2	Elective	6th semester	50	1			50	1																						100
Specialized subjects	Molecular Cell Biology	2	Elective	6th semester	50	1			50	1																						100
Specialized subjects	Animal Nutrition	2	Elective	6th semester	50	1			50	1																						100
Specialized subjects	Plant Nutritional Physiology	2	Elective	6th semester	50	1			50	1																						100
Specialized subjects	Graduation Thesis I-III	6	Required	6th-8th semester																									100	1		100

& u n d e r s t a n d i n g								
	Expertise regarding methods for identifying the mechanism of function expression in food and food material and for application of the function.							

Expertise and ethics of science and technology regarding analysis and evaluation methods for safety of food and food material.							
Expertise regarding production management and distribution of foods							
Expertise regarding food processing technologies and development of useful materials.							

A b i l i t i e	Basic ability in communication, information processing, and physical activities required for acquiring expertise						
		"Experimental Methods and Laboratory Work in Physics I" and "Experimental Methods and Laboratory Work in Physics II" () "Experimental Methods and Laboratory Work in Physics I" and "Experimental Methods and Laboratory Work in Physics II" ()					
		"Experimental Methods and Laboratory Work in Chemistry I" and "Experimental Methods and Laboratory Work in Chemistry II" () "Experimental Methods and Laboratory Work in Chemistry I" and "Experimental Methods and Laboratory Work in Chemistry II" ()					
	Basic experimentation abilities and skills required for acquiring expertise	"Experimental Methods and Laboratory Work in Biology I" and "Experimental Methods and Laboratory Work in Biology II" () "Experimental Methods and Laboratory Work in Biology I" and "Experimental Methods and Laboratory Work in Biology II" ()					
			Laboratory Work in General Biology I & II ()				
			Laboratory Work in General Chemistry ()				
			Laboratory Work in General Physics ()				
	Basic techniques and methodologies for handling foods and food materials, ability to understand various phenomena regarding foods from scientific points of view, and capability of organizing the study result in a report						

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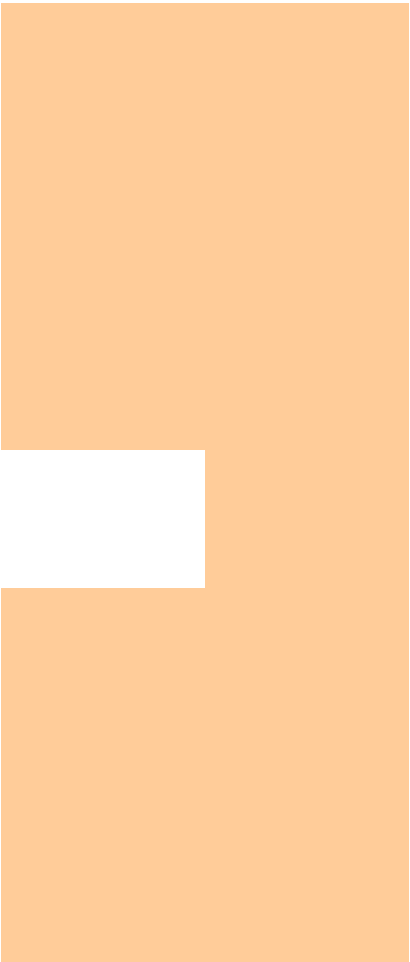
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Acquisition of techniques for
production of foods from marine
and animal resources and
capability of consideration of
practical measures for
conversion to safe and highly
functional foods

Agricultural
Production
Resources()

Capable of organizing and
consider44 in 0.wo is 16770r}



e n s i v e c a p									
	Ability to read and understand technical explanations and basic reading capabilities of scientific English								

(Example) Liberal arts subjects Specialized fundamental Specialized subjects Graduation thesis () Required subjects () Elective required () Elective subjects

List of Faculty Members of the Food Science Program

Name of faculty	Name of program and position	Extension number	Laboratory	Mail address
Manabu Asakawa	Professor		A804	asakawa@hiroshima-u.ac.jp
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Tadashi Shimamoto	Professor		A505	tadashis@hiroshima-u.ac.jp
Takuya Suzuki	Professor		A808	takuya@hiroshima-u.ac.jp
Hiroyuki Nakano	Professor		A514	hnakano@hiroshima-u.ac.jp
Yoshio Hagura	Professor		A123	hagura@hiroshima-u.ac.jp
Kiyoshi Kawai	Professor		A122	kawai@hiroshima-u.ac.jp
Kenji Hosono	Associate Professor		B215	kjhosono@hiroshima-u.ac.jp
Makoto Hirayama	Associate Professor		A805	hirayama@hiroshima-u.ac.jp
Hajime Kobayashi	Assistant Professor		B217	yount@hiroshima-u.ac.jp
Yoshinari Yamamoto	Assistant Professor		A807	yamamo59@hiroshima-u.ac.jp
Thanutchaporn Kumrungsee	Associate Professor		A617	kumrung@hiroshima-u.ac.jp
Yoko Tsurunaga	Visiting Professor			Class : Agricultural Products and Food Processing
Yagabe Takafumi	Visiting Professor			Class : Science and Technology for Food Development
	Visiting Professor			Class : Science and Technology for Food Development
	Visiting Professor			Class : Food Information Management, Food Production Process Management
	Visiting Associate Professor			Class :