

## Personal details

### Personal details

**First / given name** Jan  
**Second given name**  
**Third given name**  
**Surname/family name** Kuś  
**Date of birth** 28 January 2002  
**Preferred first/given name** Jan  
**Previous surname**  
**Country of birth** Poland  
**Legal nationality** Polish  
**Dual nationality**  
**Country of residence** Poland  
**Have you previously studied with us at the University of Bristol?** No

## Contact details

### Home address

Please provide your permanent residential address. If you have another address and would prefer for us to contact you at that address instead you have the opportunity to add a correspondence address in the next section.

**Country** Poland  
**Postcode** 41-300  
**Address Line 1** Krótka 5  
**Address Line 2**  
**City** Dąbrowa Górnicza  
**County**  
**Telephone**

If you would like us to send any postal correspondence to an address which is not your home address please enter an alternative address here. If you want us to send correspondence to your home address then please select No.

**Do you want to add a correspondence address?** Yes  
**Country** England  
**Postcode** CV8 2FY  
**Address Line 1** 3 Albion Court  
**Address Line 2** 81 Albion Street  
**City** Kenilworth  
**County**  
**Telephone**

## Agent

### Agent details

**Agency Name**  
**Email address**

## Other information

### Additional Documents

*Please upload required documents as outlined in your admissions statement*

### Mode of study

How would like to study this Full Time  
programme?

# Qualifications

## Qualifications

Institution	Qualification	Type	Subject	Actual/predicted	Grade	Start date	End date
University of Warwick	First degree BA/BSC etc EU	Academic Qualification	Mathematics	Predicted	86%	01/Sep/2020	15/Jul/2024

If these qualifications have altered since your last application please note the changes in the free text box here.

## English Language

Is English your first language? No

What is your first language? polish

Did you study at school/university where you were taught in English? Yes

For how many years? 4

Have you sat a relevant English language test? No

## TOEFL (internet-based)

Registration number

Date of TOEFL test

TOEFL reading score

TOEFL listening score

TOEFL speaking score

TOEFL writing score

TOEFL total score

## IELTS (International English Language Testing System)

Test report form (TRF) number

UKVI number (if applicable)

Date of IELTS test

IELTS listening score

IELTS reading score

IELTS writing score

IELTS speaking score

IELTS total score

## Pearson Test of English

Score report code

Date of Pearson test

Pearson listening score

Pearson reading score

Pearson speaking score

Pearson writing score

Pearson overall score

## Other English Language test

Name of course

Registration number

Date of test

Listening score

Writing score

Reading score

Total score

## Experience

### Current Employer

Employer name and address

Job title and main duties

Full time/Part time

Date of Appointment

End date (if applicable)

### Previous employment 1

Employer name and address

Job title and main duties

Full time/Part time

Date of Appointment

End date (if applicable)

### Previous employment 2

Employer name and address

Job title and main duties

Full time/Part time

Date of Appointment

End date (if applicable)

### Previous employment 3

Employer name and address

Job title and main duties

Full time/Part time

Date of Appointment

End date (if applicable)

### Other Experience

Do you have any other relevant  
work experience to support your  
application?

Please provide details

## Personal statement

### Personal details

Do you have a personal statement to upload? Yes  
Please type your personal statement in the box

## Research proposal

### Research proposal

Proposed supervisor 1 Oleksiy Klurman

Proposed supervisor 1

Proposed project title Ergodic theory and Analytic Number theory  
(max 150 chars)

# Passport and visa

## Visa required

Do you require a visa to study in the UK? No

Please fill out your passport details below. If you are unable to provide these at the current time you will have another opportunity to upload your passport after you submit the form. If you do not provide us with this information we will be unable to issue you with your confirmation of acceptance number and you will be unable to obtain a visa.

## Passport details

Passport number

## Further details

Have you previously studied in the UK?

What was the highest level of study in the UK?

Please confirm the total length of your UK study in years

# Referees

## Referee 1

Do you have a reference to upload? No

Type of reference Academic

Referee title Dr

Forename Joel

Surname Moreira

Position Assistant Professor

Institution/Company University of Warwick

Email address joel.moreira@warwick.ac.uk

Country United Kingdom

## Referee 2

Do you have a second reference to upload? No

Type of reference Academic

Referee title Professor

Forename Vassili

Surname Gelfreich

Position Professor of Mathematics

Institution/Company University of Warwick

Email address V.Gelfreich@warwick.ac.uk

Country United Kingdom

# Funding

## Funding 1

What is your likely source of funding? University of Bristol scholarship

Please give the name of your scholarship or Studentship  
Please specify

Percentage from this source 100

Is this funding already secured? No

## Funding 2

What is your likely source of funding?

Please give the name of your scholarship or Studentship  
Please specify

Percentage from this source

Is this funding already secured?

## Funding 3

What is your likely source of funding?

Please give the name of your scholarship or Studentship  
Please specify

Percentage from this source

Is this funding already secured?

## Other funding

I would like to be considered for other funding opportunities Yes

## Documents

Document type	File name
Personal statement	personal statement-1.pdf
Research proposal	research proposal-1.pdf
Transcript	HEAR_1844982_1.pdf

By ticking the checkbox below and submitting your completed online application form, you acknowledge the University of Bristol will use the information provided from time to time, along with any further information about you the University may hold, for the purposes set out in the [University's full Data Protection Statement](#). Applicants applying to the collaborative programmes of doctoral training should also read the [Data Protection Statement](#) for collaborative programmes of doctoral training.

The information that you provided on your application form will be used for the following purposes:

- To enable your application for entry to be considered and allow our Admissions Advisors, where applicable, to assist you through the application process;
- To enable the University to compile statistics, or to assist other organisations to do so. No statistical information will be published that would identify you personally;
- To enable the University to initiate your student record should you be offered a place at the University.

All applicants should note that the University reserves the right to make without notice changes in regulations, courses, fees etc at any time before or after a candidate's admission. Admission to the University is subject to the requirement that the candidate will comply with the University's registration procedure and will duly observe the Charter, Statutes, Ordinances and Regulations from time to time in force.

By ticking the checkbox below and submitting your completed online application form, you are confirming that the information given in this form is true, complete and accurate and that no information requested or other material information has been omitted. You are also confirming that you have read the Data Protection Statement and you confirm the statement below.

I can confirm that the information I have provided is true, complete and accurate. I accept that the information given in my application will be stored and processed by the University of Bristol, in accordance with the *UK General Data Protection Regulation and Data Protection Act 2018*, in order to:

- Consider my application and operate an effective and impartial admissions process;
- Monitor the University's applicant and student profile;
- Comply with all laws and regulations;
- Ensure the wellbeing and security of all students and staff;
- If my application is successful to form the basis of the statement made within my application.

If the University of Bristol discovers that I have made a false statement or omitted significant information from my application, for example examination results, I understand that it may have to withdraw or amend its offer or terminate my registration, according to circumstances.



# Jan Kuś

Birthdate: 28th January 2002  
Jankus493@gmail.com

+44 07889615995

## Education

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- |                |   |
|----------------|---|
| 2016 - 2020    | <b>High school diploma</b><br>VIII LO im. Marii Skłodowskiej-Curie<br><i>with score: 93/100</i> |
| 2020 - present | <b>Master of Mathematics (MMath)</b><br>University of Warwick                                   |

## Competitions

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- **International Mathematics Competition 2022**  
Second Prize
- **International Mathematics Competition 2023**  
First Prize
- **International Student Team Competition in Mathematics 2023**  
Gold Medal and the Best Individual Performance Prize

## Languages

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- **Polish** Native Language
- **English** 2nd Language

## Hobbies

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Chess, Classical music, Hiking, Reading, Board games

# Personal Statement

I am applying for the doctoral program at Bristol University due to its strong academic standing. In particular, Bristol combinatorics group has several researchers whose work aligns with my interests. My motivation to pursue a PhD in mathematics stems from my fascination with the intersections of analysis, combinatorics and number theory. Through my research project in ergodic theory and number theory, I have developed a deep appreciation for how these fields connect to each other and how viewing a problem from a different perspectives may be leveraged to solve it.

My favourite result in all of mathematics is Szemerédi's theorem. What I find fascinating about it are the many approaches to proving it, drawing from different fields like graph theory, ergodic theory or Fourier analysis. The interconnectedness of different parts of mathematics has always intrigued me. This interest led me to choose my research project topic, for which I studied the paper by Bergelson and Richter on Dynamical generalisation of the Prime Number Theorem. This in turn yields many different results related to twisted averages of Liouville function as well as the Prime Number Theorem in arithmetic progressions. I have also studied the paper by Frantzikinakis and Host concerning the logarithmic Sarnak's conjecture. In their work, the authors transform the conjecture into a purely ergodic form, which allows them to resolve it using well-established ergodic methods. While working on this paper I learned a lot about the theory of nilsystems and nilsequences and other related topics.

I have participated in seminars focused on ergodic theory and analytic number theory, through which I had the opportunity to learn more about some of the latest developments in these areas. I have also participated in various maths competitions. In 2023, I earned gold medals in both the International Mathematics Competition (IMC) and the International Student Team Competition in Mathematics (ISTCiM). Thanks to these experiences I met many like-minded people passionate about mathematics, and developed my problem solving skills.

I am confident my background has prepared me for doctoral-level research, and I am excited to contribute to new discoveries in mathematics. I believe pursuing a PhD at Bristol University would prepare me for an academic career in mathematics. Most importantly, I look forward to the opportunity to work with the researchers within the combinatorics group at Bristol University.

# Research Proposal

I am interested in pursuing research in the intersection of analysis, number theory and combinatorics, in particular I am interested in applications of ergodic theory to the two latter areas. This includes results related to the distribution of primes, ergodic averages and Chowla's and Sarnak's conjectures. I have studied the paper by Bergleson and Richter on Dynamical generalisation of the Prime Number Theorem as well as the paper by Frantzikinakis and Host concerning the logarithmic Sarnak's conjecture and would be interested in pursuing research in such topics.

## HIGHER EDUCATION ACHIEVEMENT REPORT

Jan Kuś  
Master of Mathematics (with Honours) Mathematics (MMath)

This Higher Education Achievement Report incorporates the model developed by the European Commission, Council of Europe and UNESCO/CEPES for the Diploma Supplement.

The purpose of the Supplement is to provide sufficient recognition of qualifications (diplomas, degrees, certificates etc). It is designed to provide a description of the nature, level, context and status of the studies that were pursued and successfully completed by the individual named on the original qualifications to which this Supplement is appended. It should be free from any value judgements, equivalence statements or suggestions about recognition.

Information in all eight sections should be provided. Where information is not provided, an explanation should give the reason why. The University of Warwick only produces HEARs in a digital format. Only HEARs accessed or verified via [www.gradintel.com](http://www.gradintel.com) can be considered valid.

### Section 1: Information identifying the holder of the qualification

<b>1.1 Family name(s):</b>	Kuś
<b>1.2 Given name(s):</b>	Jan
<b>1.3 Date of birth (day/month/year):</b>	28/01/2002
<b>1.4 Student identification number:</b>	2012286
<b>HESA identification number:</b>	2011630122860

HUSID (HESA Unique Student Identifier) is the unique national identifying number for students registered at a UK university. It is defined by HESA, the UK's Higher Education Statistics Agency.

### Section 2: Information identifying the qualification

<b>2.1 Qualification achieved:</b>	Not yet awarded
The power to award degrees is regulated by law in the UK.	
<b>2.2 Main field(s) of study:</b>	Mathematics (MMath)
<b>2.3 Name and status of awarding institution:</b>	The University of Warwick
The University of Warwick is self-governing and legally independent of government but subject to its policies and laws. The University is a degree awarding institution, operating under a Royal Charter which was established in 1965.	
<b>2.4 Name and status of institution (if different from 2.3) administering studies:</b>	As awarding institution
<b>2.5 Language(s) of instruction/examination:</b>	English

## Section 3: Information on the level of the qualification

### 3.1 HESA level of qualification:

See section 8 for reference to nationally devised "level indicators" which relate to the qualification as contained within the Framework for Higher Education Qualifications in England, Wales and Northern Ireland, (QAA, 2008). Also available at <http://www.qaa.ac.uk/>.

### 3.2 Official length of programme: 4 years full-time

### 3.3 Programme entry requirements or access:

The University aims to admit students of the highest calibre, who have the academic potential and the motivation to succeed on its challenging courses. The University encourages applications from applicants from all backgrounds and it consistently evaluates the potential of each applicant individually and on their own merits.

## Section 4: Information on the contents and results gained

### 4.1 Mode of study:

Year	Mode of Study
20/21	Full-time according to Funding Council definitions
21/22	Full-time according to Funding Council definitions
22/23	Full-time according to Funding Council definitions
23/24	Full-time according to Funding Council definitions

### 4.2 Programme requirements:

A Mathematics degree enhances a student's ability to think clearly, learn new ideas quickly, manipulate precise and intricate concepts, follow complex reasoning, construct logical arguments and expose illogical ones, invaluable skills which prepare our students for the rapidly changing modern world of employment.

Our undergraduate Mathematics programmes are distinguished by their academic excellence, flexibility and choice. All courses contain the same basic core of Mathematics in the first year, allowing easy transfer between degree courses. Our curriculum is broad, modern, and rigorous; and our degrees internationally recognised. Warwick Mathematics Institute is consistently ranked as one of the UK's top mathematics departments, with internationally renowned research that drives the quality of our teaching and the mathematical experience of students.

In undertaking study in Mathematics at Warwick, students develop an advanced knowledge of a foundational core of pure mathematics and an understanding of a range of applied mathematics and techniques. This, teamed with the ability to think independently, deploy research skills and the capacity to integrate separate arguments coherently, prepares students for professions requiring strong reasoning and analytic skills.

The MMath extends the opportunities over students on the three year BSc. by introducing them to more advanced topics, largely based on the current research interests of the department. This additional depth provides excellent preparation for further postgraduate study, as well as allowing students to pursue strains of mathematics to a much higher level than they may otherwise encounter.

#### 4.3 Programme details, and the individual grades/marks/credits obtained:

**Programme start date:** 28/09/2020

**Programme end date:** 29/06/2024

The University of Warwick introduced component assessment marks for the HEAR in the academic year 2021/2022. Prior to 2021/2022 component assessment marks are not available.

##### Mathematics (MMath) 20/21

Year	Module Code	Title	Mark %	Credits	ECTS Credits
20/21	EC106-24	Introduction to Economics	52	24.0	12.00
20/21	IB104-12	Mathematical Programming I	53	12.0	6.00
20/21	MA106-12	Linear Algebra	95	12.0	6.00
20/21	MA124-6	Mathematics by Computer	83	6.0	3.00
20/21	MA131-24	Analysis	82	24.0	12.00
20/21	MA132-12	Foundations	97	12.0	6.00
20/21	MA133-12	Differential Equations	81	12.0	6.00
20/21	MA134-12	Geometry and Motion	84	12.0	6.00
20/21	MA136-6	Introduction to Abstract Algebra	91	6.0	3.00
20/21	MA1K2-0	Refresher Mathematics	91	0.0	0.00
20/21	ST111-6	Probability (Part A)	73	6.0	3.00
20/21	ST112-6	Probability (Part B)	80	6.0	3.00
TOTAL YEAR 20/21 CREDITS				132.0	66.00

##### Mathematics (MMath) 21/22

Year	Module Code	Title	Mark %	Credits	ECTS Credits
21/22	MA213-6	Second Year Essay	81	6.0	3.00
		<b>Assessment</b>			
		Other	80%	80.00	
		Other	20%	85.00	
21/22	MA241-12	Combinatorics	100	12.0	6.00
		<b>Assessment</b>			
		Examination - April	90%	100.00	
		Worksheet	10%	95.00	
21/22	MA243-12	Geometry	94	12.0	6.00
		<b>Assessment</b>			
		Examination - April	85%	96.00	
		Worksheet	15%	81.00	
21/22	MA244-12	Analysis III	86	12.0	6.00
		<b>Assessment</b>			
		Examination - April	85%	84.00	
		Worksheet	15%	100.00	
21/22	MA249-12	Algebra II: Groups and Rings	88	12.0	6.00
		<b>Assessment</b>			
		Worksheet	15%	92.00	

		Examination - Summer (Weeks 4 to 9)	85%	87.00			
21/22	MA250-12	Partial Differential Equations			81	12.0	6.00
		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>			
		Examination - Summer (Weeks 4 to 9)	85%	78.00			
		Other	15%	95.00			
21/22	MA251-12	Algebra I: Advanced Linear Algebra			91	12.0	6.00
		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>			
		Worksheet	15%	93.00			
		Examination - April	85%	91.00			
21/22	MA252-12	Combinatorial Optimisation			100	12.0	6.00
		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>			
		Examination - Summer (Weeks 4 to 9)	100%	100.00			
21/22	MA257-12	Introduction to Number Theory			86	12.0	6.00
		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>			
		Other	15%	83.00			
		Examination - Summer (Weeks 4 to 9)	85%	86.00			
21/22	MA259-12	Multivariable Calculus			99	12.0	6.00
		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>			
		Examination - April	85%	100.00			
		Worksheet	15%	93.00			
21/22	MA260-12	Norms, Metrics and Topologies			91	12.0	6.00
		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>			
		Examination - Summer (Weeks 4 to 9)	100%	91.00			
21/22	MA269-12	Asymptotics and Integral Transforms			90	12.0	6.00
		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>			
		Examination - Summer (Weeks 4 to 9)	100%	90.00			
21/22	ST220-12	Introduction to Mathematical Statistics			90	12.0	6.00
		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>			
		Other	3%	88.00			
		Other	2%	100.00			
		Other	2%	68.00			
		Examination - Summer (Weeks 4 to 9)	90%	90.00			
		Other	3%	100.00			
TOTAL YEAR 21/22 CREDITS						150.0	75.00

### Mathematics (MMath) 22/23

Year	Module Code	Title	Mark %	Credits	ECTS Credits
22/23	MA359-15	Measure Theory	78	15.0	7.50
		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>	
		Worksheet	15%	97.00	
		Examination - April	85%	75.00	
22/23	MA3G7-15	Functional Analysis I	88	15.0	7.50
		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>	
		Examination - April	100%	88.00	
22/23	MA3G8-15	Functional Analysis II	89	15.0	7.50
		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>	
		Examination - Summer (Weeks 4 to 9)	100%	89.00	
22/23	MA426-15	Elliptic Curves	78	15.0	7.50

		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>			
		Worksheet	15%	100.00			
		Examination - Summer (Weeks 4 to 9)	85%	74.00			
22/23	MA427-15	Ergodic Theory			75	15.0	7.50
		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>			
		Examination - Summer (Weeks 4 to 9)	100%	75.00			
22/23	MA433-15	Fourier Analysis			72	15.0	7.50
		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>			
		Examination - April	100%	72.00			
22/23	MA4H9-15	Modular Forms			70	15.0	7.50
		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>			
		Examination - Summer (Weeks 4 to 9)	100%	70.00			
22/23	MA4L6-15	Analytic Number Theory			86	15.0	7.50
		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>			
		Examination - April	100%	86.00			
22/23	MA4M8-15	Theory of Random Graphs			87	15.0	7.50
		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>			
		Examination - April	100%	87.00			
22/23	ST318-15	Probability Theory			82	15.0	7.50
		<b>Assessment</b>	<b>Weight</b>	<b>Mark</b>			
		Examination - Summer (Weeks 4 to 9)	100%	82.00			
TOTAL YEAR 22/23 CREDITS						150.0	75.00
TOTAL CREDITS AWARDED						432.0	216.00

#### 4.4 Grading scheme and, if available, grade distribution guidance:

The following classes of degree are awarded at undergraduate level, see <http://go.warwick.ac.uk/assessmentconventions> for more information:

Classification	Normal Average Grade
First Class Honours	At least 70%
Second Class Honours (1st Division)	At least 60%
Second Class Honours (2nd Division)	At least 50%
Third Class Honours	At least 40%
Pass	At least 35%

#### 4.5 Overall classification of the qualification (in original language):

## Section 5: Information on the function of the qualification

#### 5.1 Access to further study:

This qualification may allow access to further study (at FHEQ level 7 or for equivalent EHEA second cycle qualifications) subject to individual requirements of the institution concerned.



## 5.2 Professional status (if applicable):

Not applicable

## Section 6: Additional information

The University of Warwick has agreed a list of activities undertaken outside the academic curriculum that will be recorded in the HEAR. All activities recorded in this section have been verified by the University. This section also includes any departmental or University prizes won. Other activities and achievements not included in the HEAR, may be recorded in a CV or e-portfolio. Visit <http://www.warwick.ac.uk/hear> for a full list of activities.

Note: The HEAR was introduced at the University of Warwick at the beginning of the 2011/12 academic year, and therefore includes only information about activities undertaken and prizes awarded in the 2011/12 academic year or later.

### 6.1 Additional information:

### 6.2 Further information sources:

The University of Warwick is one of the UK's leading universities, with an acknowledged reputation for excellence in research and teaching, for innovation, and for links with business and industry. Its mission is:

- To become a world leader in research and teaching
- Through research of international excellence, to increase significantly the range of human knowledge and understanding
- To equip graduates to make an important contribution to the economy and to society
- To serve our local region - academically, culturally and economically
- To continue to make a Warwick education available to all those able to benefit from it, regardless of economic or social circumstances.

Find out more at <http://www.warwick.ac.uk/about>.

## Section 7: Certification of the HEAR

7.1 Date Not yet certified

7.2 Signatory: Adam Child



7.3 Official capacity: Academic Registrar

7.4 Official stamp or seal



## Section 8: Information on the national higher education system

### Description of Higher Education in England, Wales and Northern Ireland

In England, Wales and Northern Ireland<sup>1</sup>, higher education institutions are independent, self-governing bodies active in teaching, research and scholarship. They are established by Royal Charter or legislation and most are part-funded by government. Higher education (HE) is provided by many different types of institution. In addition to universities and university colleges, whose charters and statutes are made through the Privy Council which advises the Queen on the granting of Royal Charters and incorporation of universities, there are a number of publicly-designated and autonomous institutions within the higher education sector. Publicly funded higher education provision is available in some colleges of further education by the authority of another duly empowered institution. Teaching to prepare students for the award of higher education qualifications can be conducted in any higher education institution and in some further education colleges.

#### Degree awarding powers and the title 'university'

All universities and many higher education colleges have the legal power to develop their own courses and award their own degrees, as well as determine the conditions on which they are awarded. Some HE colleges and specialist institutions without these powers offer programmes, with varying extents of devolved authority, leading to the degrees of an institution which does have them. All universities in existence before 2005 have the power to award degrees on the basis of completion of taught courses and the power to award research degrees. From 2005, institutions in England and Wales that award only taught degrees ('first' and 'second cycle') and which meet certain numerical criteria, may also be permitted to use the title 'university'. Higher education institutions that award only taught degrees but which do not meet the numerical criteria may apply to use the title 'university college', although not all choose to do so. All of these institutions are subject to the same regulatory quality assurance and funding requirements as universities; and all institutions decide for themselves which students to admit and which staff to appoint. Degrees and other higher education qualifications are legally owned by the awarding institution, not by the state. The names of institutions with their own degree awarding powers ("Recognised Bodies") are available for download at: <http://www.bis.gov.uk/policies/higher-education/recognised-uk-degrees/recognised-bodies>

Higher education institutions, further education colleges and other organisations able to offer courses leading to a degree of a Recognised Body are listed by the English, Welsh and Northern Irish authorities, and are known as "Listed Bodies". View the list at: <http://www.bis.gov.uk/policies/higher-education/recognised-uk-degrees/listed-bodies>

#### Qualifications

The types of qualifications awarded by higher education institutions at sub-degree and undergraduate (first cycle) and postgraduate level (second and third cycles) are described in the Framework for Higher Education Qualifications in England, Wales and Northern Ireland (FHEQ). This also includes qualification descriptors that were developed with the HE sector by the Quality Assurance Agency for Higher Education (QAA - established in 1997 as an independent UK-wide body to monitor the standard of higher education provision - [www.qaa.ac.uk](http://www.qaa.ac.uk)). The FHEQ was self-certified as compatible with the Framework for Qualifications of the European Higher Education Area, the qualifications framework adopted as part of the Bologna Process, in February 2009. Foundation degrees, designed to create intermediate awards strongly oriented towards specific employment opportunities, were introduced in 2001. In terms of the European Higher Education Area they are "short cycle" qualifications within the first cycle. The FHEQ is one component of the Credit and Qualifications Framework for Wales (CQFW). The Qualifications and Curriculum Authority (QCA), the Department for Children, Education, Lifelong Learning and Skills, Wales (DCELLS) and the Council for

Curriculum Examination and Assessment, Northern Ireland (CCEA) have established the Qualifications and Credit Framework (to replace, in time, the National Qualifications Framework (NQF)). These authorities regulate a number of professional, statutory and other awarding bodies which control VET and general qualifications at all levels. The QCF is also incorporated into the CQFW. There is a close association between the levels of the FHEQ and the NQF (as shown overleaf), and other frameworks of the UK and Ireland (see 'Qualifications can cross Boundaries' <https://www.qaa.ac.uk/docs/qaa/quality-code/qualifications-can-cross-boundaries.pdf>)

#### Quality Assurance

Academic standards are established and maintained by higher education institutions themselves using an extensive and sophisticated range of shared quality assurance approaches and structures. Standards and quality in institutions are underpinned by the universal use of external examiners, a standard set of indicators and other reports, by the activities of the QAA, and in professional areas by relevant professional, statutory and regulatory bodies. This ensures that institutions meet national expectations described in the FHEQ: subject benchmark statements, the Code of Practice and programme specifications. QAA conducts peer-review based audits and reviews of higher education institutions with the opportunity for subject-based review as the need arises. The accuracy and adequacy of quality-related information published by the higher education institutions is also reviewed. QAA also reviews publicly funded higher education provision in further education colleges.

#### Credit System

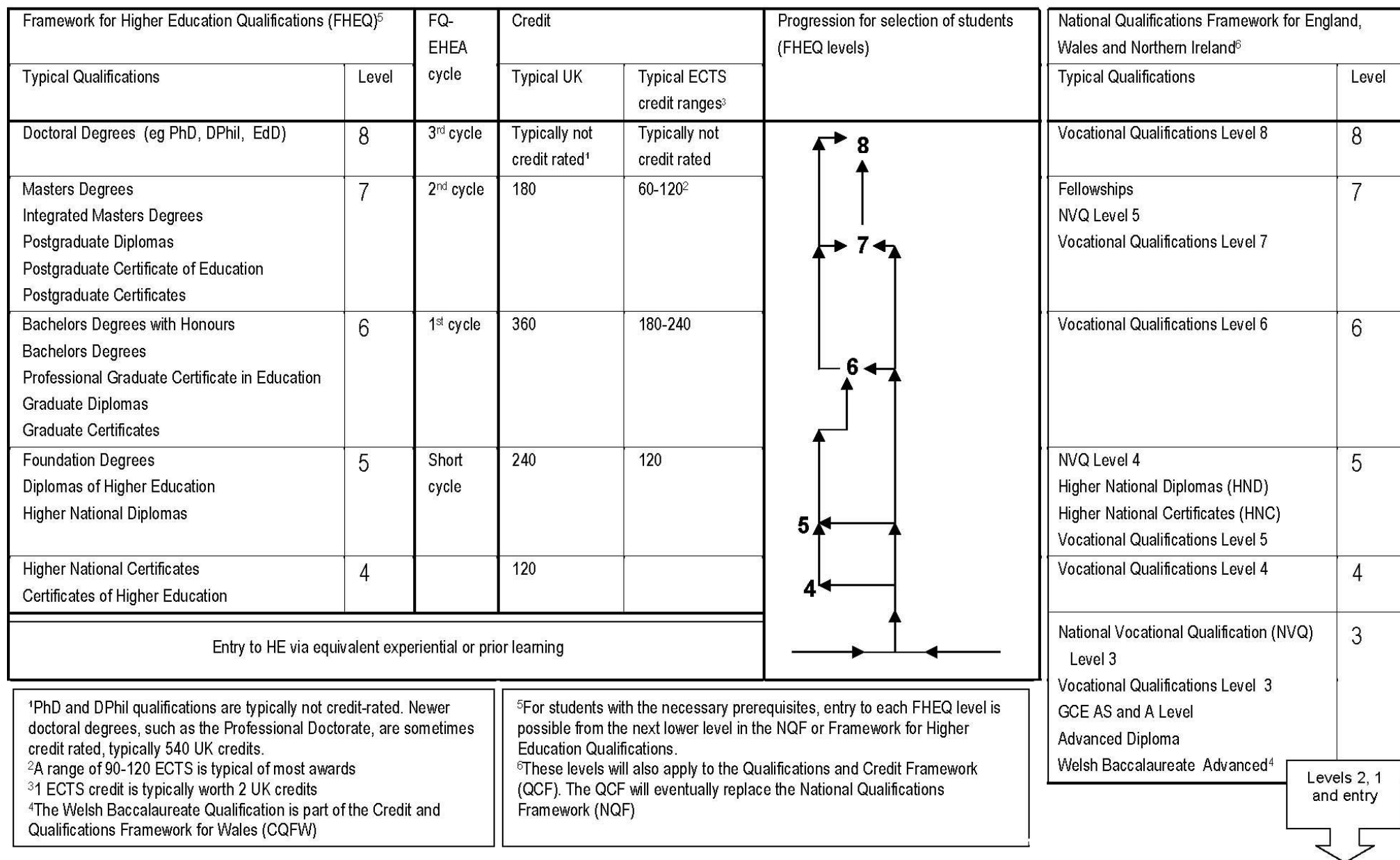
Most higher education institutions in England and Northern Ireland belong to one of several credit consortia and some operate local credit accumulation and transfer systems for students moving between programmes and/or institutions. A framework of national guidelines, the Higher Education Credit Framework for England, was launched in 2008. Credit is also an integral part of the CQFW and the QCF. It may be possible for credit awarded in one framework to be recognised by education providers whose qualifications sit within a different framework. HE credit systems in use in England, Wales and Northern Ireland are compatible with the European Credit Transfer System (ECTS) for accumulation and transfers within the European Higher Education Area, and are used to recognise learning gained by students in institutions elsewhere in Europe.

#### Admissions

The most common qualification for entry to higher education is the General Certificate of Education at 'Advanced' (A) level. Other appropriate NQF level 3 qualifications and the kite-marked Access to HE Diploma may also provide entry to HE. Level 3 qualifications in the CQFW, including the Welsh Baccalaureate, also provide entry, as do Scottish Highers, Advanced Highers or qualifications at the same levels of the Scottish Credit and Qualifications Framework. Part-time and mature students may enter HE with these qualifications or alternatives with evidenced equivalent prior formal and/or experiential learning. Institutions will admit students whom they believe to have the potential to complete their programmes successfully.

<sup>1</sup> The UK has a system of devolved government, including for higher education, to Scotland, to Wales and to Northern Ireland. This description is approved by the High Level Policy Forum which includes representatives of the Department for Business, Innovation and Skills, the Scottish Government, the Welsh Assembly Government, the Higher Education Funding Councils for England, Scotland and Wales, the Quality Assurance Agency (QAA), Universities UK (UUK), GuildHE and the National Recognition Information Centre for the UK (UK NARIC)

## Diagram of higher education qualification levels in England, Wales and Northern Ireland



07 January 2024

To whom it may concern

Re: reference request for Mr Jan Kuś

I am writing to support the application of Mr Jan Kuś for the the Mathematics PhD programme at the University of Bristol.

I know Jan in the capacity of his personal tutor at the Mathematics Institute of the University of Warwick since October 2022. Jan has started his study at Warwick in September 2020 and currently is a fourth year student on our Master of Mathematics program. He is expected to graduate in Summer 2024. Jan is an exceptionally strong student, his marks for Years 1, 2 and 3 are 78.9, 92.3 and 82.9 respectively. Note that a mark of 92 corresponds to top 2% performance. I have no doubts that Jan is on track towards a strong first class degree.

In my opinion Jan is one of the most gifted students I have taught at Warwick in the last 20 years. I first met him at the beginning of his third year. During this meeting we discussed his plans and initially I was worried by his decision to study a large number of Year 4 level modules in Year 3. These modules are usually more difficult and rely on knowledge of Year 3 staff. Jan proved to be right (and my worries proved to be baseless) as he showed excellent results at the exams at the end of the year. Of course, I would expect his marks to be even higher had he opted for easier standard options.

Jan has an exceptional track record in mathematics competitions.

Jan got Gold Medal and the Best Individual Performance Prize (by sharing the second place in the individual part of the competition) in the International Student Team Competition in Mathematics organized by the University of Silesia, Katowice (Poland) and Uppersilesian Branch of the Polish Mathematical Society, which took place from **November 10th-12th** 2023 in Katowice, Poland.

Jan got a First Prize and shared individual places 76-83 (out of approx 400 participants) at the International Mathematics Competition (IMC) for University Students 2023 organised by University College London and hosted by the American University in Bulgaria, 31 July-6 August 2023.

He also got a Second Prize at the previous IMC in 2022.

In conclusion, Jan is an exceptionally strong student and I support his PhD application without any hesitation.

Yours sincerely,



*Prof. Vassili Gelfreich*

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15 December 2023

I'm writing this letter to strongly recommend **Jan Kuś** who applied for a PhD program in mathematics at your institution. Jan is currently pursuing a Master of Mathematics at the University of Warwick, which he started in 2020 and is expected to be completed in the Summer of 2024. I am currently supervising Jan's final year project so I have a good first hand understanding of his academic talents, and I am impressed by his ability to learn new advanced mathematics and the depth of his understanding.

I first met Jan last summer, when he approached me to do his final year project with me, being interested in number theory and ergodic theory. On our first meeting to decide on a topic for the project, he showed great familiarity with the area and an interest in pursuing one of the most advanced topics from those I suggested. We agreed that he would read the paper "*The logarithmic Sarnak conjecture for ergodic weights*" by Frantzikinakis and Host. For context, this is a recent article that appeared in the Annals of Mathematics in 2018 and uses several tools from ergodic theory and analytic number theory that were developed only in the last 20 years. My expectation was that reading and understanding the paper would take most of the year, but in only a couple of months he read and understood the entire paper and would be asking about some rather delicate details in the proof.

He shows great interest in the subject and resourcefulness. For instance, he took it upon himself to start learning the relevant ergodic theory of multiple recurrence and nil-systems, which I had expected he would take as a blackbox. For this he identified a recent book of Host and Kra (whose content I would consider appropriate for an advanced PhD module) and arranged for the library at the university to acquire a copy. He is now reading this book in parallel with a second paper of Bergelson and Richter on a related but different topic.

In short, Jan is the strongest fourth year student I have supervised at Warwick, and I am certain he will be successful in a PhD program in mathematics.

Sincerely Yours,



Joel Moreira  
Assistant Professor

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