

Pre-Bachelor Semester

Program Handbook 2024

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CONSTRUCTOR UNIVERSITY

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Basic information

Program Name: Pre-Bachelor Semester (PBS)

Type: Pre-degree

Level: Level 0 (Pre-university)

Exit award: Pre-Bachelor Semester Certificate (PBSC)

Award notes: Successful completion of the PBS program is recognized by

Constructor University as an element in securing progression to

several specified undergraduate degree programs.

Modes of study: All students will be full-time students. Teaching language is English,

and no German knowledge is required for the studies.

Age requirements: All students must be at least 16 years old when entering the program.

Award	Standard entry requirements			
Pre-Bachelor Semester Certificate (PBSC	CEFR B2 – C1 / 6.5 IELTS (or equivalent)			
	Minimum academic requirement is a High School Diploma/Certificate recognized as a higher education entrance qualification in Germany. Recognition is determined following guidance of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany ("Kultusministerkonferenz", KMK) and the State of Bremen.			

Program overview

The Constructor University Bremen Educational Concept

Constructor University Bremen (CUB) aims at educating students for both an academic and a professional career, putting an emphasis on four fundamental objectives: academic quality, self-development and personal growth, internationality, and the ability to succeed in the working world (employability). Hence, undergraduate study programs at CUB offer a comprehensive and structured approach to prepare students for graduate education as well as career success by combining disciplinary depth and interdisciplinary breadth supplemented with skills education and extra-curricular elements.

In this context, it is CUB's aim to educate talented young people from all over the world, regardless of nationality, religion, and material prerequisites, to become citizens of the world who can take responsible roles for a democratic, peaceful, and sustainable development of the societies they live in. This is achieved by employing high levels of teaching quality as well as manageable study loads and supportive curricular conditions. Undergraduate study programs including study abroad components convey academic knowledge as well as the ability to interact positively with other individuals and groups in culturally diverse environments. The ability to succeed in the working world is a core objective both in terms of the actual disciplinary subject matter and social skills coupled to intercultural competence. Study-program-specific and specialization modules provide the necessary depth, interdisciplinary offerings and minor options provide breadth, while university-wide general foundation and methods modules, German language courses, and an extended internship period strengthen the employability of students. The concept of living and learning together on an international campus with many cultural and social activities supplements this education. Additionally, CUB offer professional advising and counselling as part of its guidance services.

CUB's educational concept is appreciated both nationally and internationally. While the university has consistently achieved top marks over the last decade in Germany's most comprehensive and detailed university ranking by the Centre for Higher Education (CHE), it has also been listed by the renowned Times Higher Education (THE) magazine as one of the top 300 universities worldwide in 2020. The THE Ranking is considered as one of the most widely observed university rankings. It is based on five major indicators: research, teaching, research impact, international orientation, and the volume of research income from industry.

Program - specific educational aims

The Pre-Bachelor Semester (PBS) is a pre-degree program which enables students to prepare for their undergraduate education during the preceding Spring semester and acclimate themselves to living and studying in another country where cultural context is very different from their own. Alongside language and mathematical skill development, students working towards the PBS Certificate are also able to take a CHOICE undergraduate module directly related to programs onto which they wish to progress as well as an undergraduate language or humanities module. They are therefore able to move onto first year degree studies with increased confidence in their university study skills and subject knowledge. Students will also be exposed to the fundamentals of coding as an important aspect of the modern job market. The PBS program also includes a 'Career Development' module that supports students with study skills and career guidance to assist them in their decision of study direction, as well as an 'Intercultural Competence and Culturally Sensitive Communication' undergraduate module to help them adapt to the international environment within CUB.

Qualification Aims

The PBS program at CUB aims to help students:

- develop their English academic literacy;
- reinforce their mathematical knowledge;
- develop coding and computational skills;
- recognize what is expected of them in a university environment;
- take a module offered in the undergraduate program that would best suit their interests, with possibility of credit transfer;
- expand their academic and personal qualifications through career development customized to the needs of a PBS student at CUB;
- broaden socio-cultural horizons and intercultural skills.

Intended Learning Outcomes

By the end of the program, students will be able to:

- understand what is expected of them in a university environment;
- apply improved academic English thinking, reading, and writing skills in an academic context or use improved mathematical skills to solve applied problems;
- use digital devices to create, gather, analyze, and present information;
- prepare properly for their upcoming undergraduate education;
- learn and work in an intercultural and diverse environment;
- reflect on their personal and professional development.



Program structure

Core modules include a Mathematics or Academic Literacy module, 'Career Development', and 'Coding & Computational Thinking'. Undergraduate modules include a Choice module from the Spring Semester (as per prerequisite conditions), a language or humanities module, and 'Intercultural Competence and Culturally Sensitive Communication'. This module combination will ensure proper academic preparation for PBS students towards a smooth entry into the undergraduate program of choice.

Schematic Study Plan



Teaching, learning and assessment strategies

The PBS program implements a range of adaptive and innovative approaches to teaching, learning and assessment. Students and their personal development are at the heart of these strategies:

- **A** The PBS students are provided with a highly supportive and academically challenging environment to develop their English language or mathematical skills.
- **B** Students will benefit from a less formal teaching approach, involving greater interactivity within classes and between students and instructors more questioning of received opinion and a significant step towards establishing the students as autonomous learners. The students' confidence is enhanced through working in discrete and small teaching groups, by the promotion of student participation in a supportive and encouraging environment, and by devoting time in formal classes to reinforcement of material studied.
- **C** Cultural acclimation to a higher education environment is facilitated through encouragement to participate in the wider community of both CUB and Bremen itself.
- **D** The PBS program aims to cater for students who want to properly prepare for their undergraduate studies and experience an intercultural university life during the preceding Spring semester.
- ➤ Alongside the modules, students will engage in a Career Development module, which provides ample opportunity for students to be introduced to and reflect on the requirements of study in a higher education environment. The module focusses on academic and life skills of a wider purpose, which helps prepare students not only for their degree studies but also gain a jump start on their career development, professional skills, and gain a unique understanding of the international job market.

- **F** Regular tutorial sessions provide an opportunity for students to reflect on their study progress, for the instructor to monitor their progress and provide any additional support the students might need to strengthen weaker knowledge areas.
- **G** A range of modes of assessment are applied to include assignments, group and individual presentations, projects, and interim tests, in order to replicate the wider university experience. Midterm and final module assessments provide the contribution to the final module grade.
- > H Policies governing core modules are included in the 'Rules and Regulations', which will be presented to the students at the beginning of the academic year. Policies governing UGE modules are included the 'Academic Policies for Undergraduate Students' as well as 'Academic Integrity', which can be found on the CU website under 'Registrar Services'.

Regulations

Students studying within the PBS program follow a set of regulations appropriate to a Level 0 program but modelled to CUB's undergraduate students. Variations are only introduced to cover the requirements of a pre-degree program, particularly around reassessment opportunities. As part of the entrance requirement for the PBS program students need to have achieved the English language requirement for university entrance. Successful completion of the PBS program allows direct progress onto CUB's undergraduate education.

Admission requirements

All students who obtain a high school diploma or local equivalent prior to the start of the program and who possess English language skills equivalent to the **B2 level** of the European Framework may apply for the Pre-bachelor semester program. The application process is selective and seeks out motivated students who show both the intellectual and social potential to thrive in a diverse international study environment.

A complete Pre-bachelor Semester application consists of the following:

- Online Application Form including a Personal Motivation Statement
- Recommendation Letter from a counsellor or teacher
- Certified copies of school transcripts of the last 2-3 years and a certified copy of the High School Certificate
- Educational History Form
- Proof of English Language Proficiency (minimum score of 90 on the TOEFL iBT / 6.5 on the IELTS (UK) / standard score of 600 SAT Evidence-Based Reading and Writing (New SAT)/ 110 on the Duolingo English test)

Important information for the upcoming Spring 2024 intake: Students who require a visa for Germany should apply by October 15th since the visa process can take up to two months. The application deadline for EU students is December 15th. Applications are evaluated on a rolling basis.

The curricular structure

Overview

The PBS program offers within the Spring semester three mandatory CORE modules in addition to mandatory elective undergraduate modules (one CHOICE and one language) alongside 'Intercultural Competence and Culturally Sensitive Communication'. All undergraduate modules are eligible for credit transfer upon successful completion.

Core Modules

Academic English and Literacy (5.0 credit points)

The language learning content is skills based and maps against IELTS level descriptors for Band 6 in Writing, Reading, Listening and Speaking. The module focus is on greater fluency in English language and improved academic literacy skills. Students are introduced to the scientific approach to study with an emphasis on higher-level skills such as analysis, synthesis, critical thinking, and evaluation. The students will undergo an English proficiency placement test at the beginning of the semester to identify their English proficiency level.

Pure Mathematics (5.0 credit points)

This module is essential for students entering undergraduate programs within the Schools of 'Science' and 'Computer Science & Engineering'. Since developed mathematical skills are essential for these students, 'Pure Mathematics' provides them with the essential knowledge and tools to be properly prepared for the respective undergraduate degrees at CUB. The course covers main topics in introductory algebra and calculus, and the study sessions include extensive problem solving as well as tutorials.

Foundation Statistics (5.0 credit points)

This module is essential for students entering undergraduate programs within the School of 'Business, Social & Decision Sciences'. Fundamental knowledge in statistics is essential for these students. The module covers main topics in statistical analysis and probability, sampling, and confidence limits, as well as correlation and regression. The study sessions include extensive application of statistical concepts on applied models.

Computational Thinking and Coding (2.5 credit points)

In this module, students will analyze problems, refine concepts, and reflect upon the decision-making process by engaging in design, coding and computational thinking, and sustainable action. They will identify, explore, and clarify technological information and use that knowledge in various situations and challenges.

Career Development (2.5 credit points)

The module is designed to support and guide students within their study direction while focusing on the potential career paths it may lead to. Students have the unique opportunity to start their career development during their Foundation Year by meeting industry professionals, gaining valuable networking and professional skills to jump-start their career path while studying. It further enables students to attain the needed study skills to succeed at university, while focusing on their individual and cultural awareness, thus supporting them to flourish at Constructor University Bremen and within the global working environment.

Undergraduate Modules

CHOICE (7.5 ECTS credit points)

During the Pre-Bachelor Semester program, students have the opportunity to take part in a bachelor module to gain valuable insights and experience into their desired field of study. Students have the option to select one CHOICE module from a variety of study programs. Each student will be assigned an academic advisor to assist them in choosing the best module which will provide them with the chance to experience undergraduate and transfer credits to their desired bachelors program. A unique feature of the curriculum structure allows students to select their major freely upon entering Constructor University.

The Undergraduate choice modules available in Spring Semester 2024 are listed below:

Bachelor Program	Choice Modules	Credits
Mathematics, Modeling and	Linear Algebra	7.5
Data Analytics		
Computer Science	Introduction to Computer Science	7.5
	Introduction to Robotics and Intelligent	7.5
	Systems	
Industrial Engineering and	General Industrial Engineering	7.5
Management		
International Relations:	Introduction to Modern European History	7.5
Politics and History		
Integrated Social and	Essentials of Social Psychology	7.5
Cognitive Psychology		
Management, Decisions and	Data Structures and Processing	7.5
Data Analytics		

The descriptions of the above choice modules are provided in the individual study program Handbooks that can be accessed from the Constructor University's website.

Language (2.5 ECTS credit points)

German language abilities foster students' intercultural awareness and enhance their employability in their host country. They are also beneficial for securing mandatory internships (between the 2nd and 3rd year) in German companies and academic institutions.

Constructor University supports its students in acquiring basic as well as advanced German Skills. The descriptions of the language modules are provided in a separate document, the "Language Module Handbook" that can be accessed from the Constructor University's website.

Humanities (2.5 ECTS credit points)

Introduction to the Philosophy of Science

The course aims to give students an understanding of how science produces knowledge, and some of the various contexts and issues which mean this process is never entirely transparent, neutral, or unproblematic. Students will gain a critical understanding of science as a human practice and technology; this will enable them both to better understand the importance and success of science, but also how to properly critique science when appropriate.

Introduction to Visual Culture

The purpose of this course is to explore multiple ways in which images and the visual in general mediate and structure human experiences and practices from more specialized discourses, e.g., scientific discourses, to more informal and personal day-to-day practices, such as self-fashioning in cyberspace. Social and historical contexts affect how we see, as well as what is visible and what is not.

Intercultural Competence and Culturally Sensitive Communication (2.5 ECTS credit points)

The course is an encompassing proposal that focuses on aspects of an incoming student process. It covers the development of cultural awareness and intercultural communication capacities, dimensions of diversity, understanding the pitfalls of stereotyping, defining microaggressions and prejudice, intercultural competence in the German context and human rights from a perspective of diversity and inclusion.





Module Name			Module Code	Level	ECTS
ACADEMIC ENGLISH AND LITERACY				FOUNDATION	5.0
Module Compor	nents				
Number	Name			Type	<i>ECTS</i>
	Seminar style cl	asses		Tutor-led	5.0
Module Coordinator Head of Academics	Program Affiliation • Pre-Bachelor Semester • CORE module			Mandatory Status Mandatory elective for PBS students.	
Entry Requirements Pre-requisites ☑ High School Diploma ☐ None	Co-requisites □ ⊠ None	Knowledge, Abilities, or Skills English language knowledge acquired from high school	Frequency Once a year, Spring semester	PBS students. Forms of Learning and Teaching Tutor-led but interactive classes (35 hours) Tutor-led Tutorials (7 hours) Directed and independent learning (83 hours)	
			Duration One semester	Workload 125 hours	

Preparation prior to commencing the module would include an outline list of the topics to be studied and a supporting reading list.

Content and Educational Aims

This is a CORE module for all PBS students. It is designed for students to develop academic study skills to the standard required for undergraduate study. The module will include a discussion of essay structure, plagiarism, criticality for specific information, and the development of presentational skills and seminar discussions. Detailed topics are included in the module's syllabus.

Intended Learning Outcomes

By the end of this module, students will be able to

- Apply reading strategies to read extended academic texts.
- Make decisions on usefulness of content and extract useful information.
- Write extended academic texts.
- Listen interactively in classes and lectures.
- Participate in academic discourse as both an information provider and gatherer.
- Develop critical reading skills and interpret information.
- Synthesize information from listening and reading texts.
- Successfully participate in seminar discussion.
- Demonstrate basic research, speaking and presentational skills.
- Cite and refer to academic sources in written and oral form.
- Expand vocabulary to be applied in an academic context.

Usability and Relationship to other Modules

Academic English & Literacy is a CORE module studied by all students joining the PBS program. It prepares student with the proper English knowledge for their undergraduate studies.

Assessment

Midterm and Final Assessment

Scope: Topics studied as covered by the Learning Outcomes

Weight: 40% Presentation and Handout

60% Final Written Exam

Module Name		Module Code	Level	ECTS	
FOUNDATION STATISTICS				FOUNDATION	5.0
Module Compon	ents				
Number	Name			Type	<i>ECTS</i>
	Seminar style cla	sses		Tutor-led	5.0
Module Coordinator Head of Academics	Program Affiliati • Pre-Bachelor S • CORE module		Mandatory State Mandatory ele PBS students.		
Entry Requirements Pre-requisites ☑ High School Diploma □ None	Co-requisites □ ⊠ None	Knowledge, Abilities, or Skills Mathematical knowledge acquired from high school	Frequency Once a year, Spring semester	Forms of Learni Teaching Tutor-led but interactive class hours) Tutor-led Tutor hours) Directed and independent let (83 hours)	sses (35 orials (7
			Duration One semester	Workload 125 hours	

Students need to review the mathematical knowledge acquired from high school. Course slides and book chapters are provided beforehand so that students can come prepared to class.

Content and Educational Aims

This is a Mathematics CORE module for PBS students. It introduces the fundamental aspects and basic requirements of statistical concepts for continuing studies in the disciplines within business, economics, and social sciences. The module content covers main areas in statistical analysis, probability, and sampling and correlation methods. Detailed topics are included in the module's syllabus.

Intended Learning Outcomes

By the end of this module, students will be able to

- Perform basic statistical operations.
- Apply their knowledge in the most efficient way through solving problems.
- Use statistics in applied case studies.
- Improve presentation skills of statistical projects.
- Analyze datasets through respective distribution tables and charts.
- Use discrete and continuous probability distributions.
- Explain the different types of sampling methods and their practicality.
- Use tests to evaluate the confidence levels of sampling methods.
- Correlate data variables and analyze their regression.
- Prepare properly for an undergraduate program which includes statistical methods.

Usability and Relationship to other Modules

Foundation Statistics is a CORE module for all students who are interested in continuing their studies in the different areas of business, social science, and humanities. It enables the students, with the fundamental needed knowledge in statistics, to enhance their performance within modules that require such knowledge, like economics for example. Nowadays, statistics is used in almost all social and natural scientific disciplines.

Assessment

Midterm and Final Assessment

Scope: Topics studied as covered by the Learning Outcomes

Weight: 40% Midterm Assignment

60% Final Written Exam

Module Name PURE MATHEMATICS			Module Code	Level FOUNDATION	ECTS 5.0
Module Compor	nents				•
Number	Name			Type	<i>ECTS</i>
	Seminar style cla	asses		Tutor-led	5.0
Module Coordinator Head of Academics	Program Affiliation • Pre-Bachelor Semester • CORE module			Mandatory Status Mandatory elective for PBS students.	
Entry Requirements Pre-requisites ☑ High School Diploma □ None	Co-requisites □ ⊠ None	Knowledge, Abilities, or Skills Advanced mathematical skills gained from high school	Frequency Once a year, Spring semester	PBS students. Forms of Learning and Teaching Teaching Tutor-led but interactive classes (35 hours) Tutor-led Tutorials (7 hours) Directed and independent learning (8 hours)	
			Duration One semester	Workload 125 hours	

Students should review their mathematical skills from high school to get prepared for the course. Course slides and book chapter are provided beforehand so that students can come prepared to class.

Content and Educational Aims

This is a Mathematics CORE module for students of the 'Technology' and 'Science' subject area. It follows the prerequisite course 'Advanced Mathematics' and develops the fundamental mathematical skills for students interested in continuing their studies within sciences, engineering, and technology. The module content covers further areas in introductory algebra and calculus. Detailed topics are included in the module's syllabus.

Intended Learning Outcomes

By the end of this module, students will be able to

- Perform advanced mathematical operations.
- Apply their knowledge in the most efficient way through solving exercises.
- Learn how to use mathematics to model and solve everyday problems.
- Factor polynomial functions using synthetic division.
- Graph polynomial and rational functions and inequalities.
- Solve systems of equation using various methods.
- Develop exponential binomials and sequences.
- Determine limits of various types of functions.
- Derive and perform derivative operations on functions.
- Apply differentiation and integration to mathematical problems and models.

Usability and Relationship to other Modules

Pure Mathematics provides students with advanced mathematical tools within disciplines which require developed mathematical knowledge, it also prepares students for the first-year undergraduate modules within the areas of sciences, engineering, and technology.

Assessment

Type: Midterm and Final Assessment

Scope: Topics studied as covered by the Learning Outcomes

Weight: 40% Midterm Written Exam 60% Final Written Exam

Module Name COMPUTATIONAL THINKING AND CODING			Module Code	Level FOUNDATION	ECTS 2.5		
Module Compor	Module Components						
Number	Name			Type	ECTS		
	Seminar style	classes		Tutor-led	2.5		
Module Coordinator Head of Academics	Program Affiliation • Pre-Bachelor Semester • CORE module			Mandatory Status Mandatory for PBS students			
Entry Requirements Pre-requisites ☑ High School Diploma ☐ None	Co- requisites □ ⊠ None	Knowledge, Abilities, or Skills Basic understanding of computer hardware and software/applications	Once a year, Spring semester	Forms of Learning and Teaching Tutor-led but interactive classes (17.5 hours) Tutor-led Tutorials (3.5 hours) Directed and independent learning (41.5 hours)			
			Duration One semester	Workload 62.5 hours			

Students enrolled in this module may lack prior formal instruction in the utilization of computers and software suitable for academic pursuits. Initial classes in this module will afford students the chance to showcase their proficiency and understanding of this subject matter.

Content and Educational Aims

This is a mandatory CORE module for all PBS students. It equips students with essential computational tools necessary for any major. It covers fundamental computing concepts and requirements, catering to students interested in furthering their studies across various subject areas. Detailed topics are included in the module's syllabus.

Intended Learning Outcomes

By the end of this module, students will be able to

- Define the importance of computational thinking.
- Improve ability to develop effective algorithms.
- Break down complex problems into smaller, manageable parts.
- Identify patterns and regularities in data and processes.
- Simplify complex systems by focusing on essential details.
- Design step-by-step instructions to solve problems.
- Understand variables, data types, and operators.
- Control structures: conditionals and loops.
- Understand and apply a new (programming) language on a basic level.
- Design a new programming language on a basic level.

Usability and Relationship to other Modules

Computational Thinking and Coding is a CORE module studied by students joining the PBS program. It is a universal module which relates to all subjects, as computational thinking and coding is now being used in all disciplines and areas.

Assessment

Midterm and Final Assessment

Scope: Topics studied as covered by the Learning Outcomes

Weight: 40% Midterm Written Exam 60% Final Written Exam

Module Name	Module Name			Leve	ECTS
CAREER DEVELOPMENT				FOUNDATION	2.5
Module Components					
Number	Style			Type	ECTS
	Seminar style cl	Seminar style classes			2.5
Module Coordinator Head of PBS	Program Affiliation • Pre-Bachelor Semester • CORE modules			Mandatory Status Mandatory for all PBS students	
Entry Requirements Pre-requisites ☑ High School Diploma □ None	Co-requisites □ ⊠ None	Knowledge, Abilities, or Skills • NA	Once a year, Spring semester.	Forms of Learni Teaching • Tutor-led but is classes (17.5 h semester • Directed and independent let (45 hours) / se	nteractive ours) / earning
			Duration One semester	Workload 62.5 hours	

Students should read their intended undergraduate program handbook and connect with an undergraduate or post graduate student involved in that direction. Students will further benefit in creating valuable contacts with whom they can network throughout their studies. This module will provide them with valuable skills and insights to jump start their career development in their Foundation Year which they can utilize throughout their studies to develop their individual career paths.

Content and Educational Aims

This is a CORE module for PBS students of all disciplines. The Career Development module will embody the mission statement of Constructor University Bremen. As such, the program will focus on increasing the self-competence and career skills of its students in a community characterized by diversity. The program is developed and based on students' specific needs to flourish within Constructor University Bremen's educational and social environment. Detailed topics are included in the module's syllabus.

Intended Learning Outcomes

By the end of this module, students will be able to

- Understand, research, and gain valuable insights within a selected study direction/career path.
- Connect and network with Industry Professionals in Germany.
- Gain professional skills such as time management and presentation skills.
- Profit from a network of career guidance and support.
- Develop critical and strategic thinking skills.
- Learn how to work in a team.
- Develop study skills needed to succeed at university.

Usability and Relationship to other Modules

The career development module provides students with the needed soft skills such as: professional skills, study skills, self-awareness, career guidance and how to work within a group/team to succeed in a diverse educational environment such as Constructor University Bremen. The program explores the different career paths, encourages social networking, and demands students to take the time to do effective research for them to make a more informed decision on their intended undergraduate study program.

Assessment

Midterm and Final Assessment

Weight: 40% Team Presentation and Report 60% Individual Poster Presentation

Scope: Topics studied as covered by the Learning Outcomes





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