

Degree programme	Type	Course
Primary Education	OP	4

Contact lecturer

Name : David Lobo Sanchiz

Email : david.lobosanchiz@uab.cat

Teaching staff

David Lobo Sanchiz

Group languages

You can consult this information at the [end](#) of the document.

Prerequisites

It is recommended that students enrolled in this subject have been enrolled and have successfully passed the following subjects of mathematics education: "Mathematics for teachers", first year; "Mathematics learning and curriculum", second year; "Management and innovation in the mathematics classroom", third year.

Objectives

GOALS

- Knowing, contextualizing, practicing and classifying some of the main abstract games across different world regions and throughout time periods.
- Exploring the relationships between games and mathematics from the perspective of the didactical contexts that emerge in the teaching of mathematics in Primary Education.
- Analyzing and designing game contexts for the cycles of Primary Education and in relation to mathematical strategies and curricular contents.
- Understanding the potential of games as mathematically rich activities that allow to develop a positive vision of mathematics while enacting cooperative work.

Learning outcomes

1. Adapt teaching and learning programs and activities to pupil diversity.
2. Understand recreational didactic situations involving mathematics, both inside and outside the classroom, to promote independent learning and cooperative work.
3. Understand, appreciate and apply mathematical games in teaching and learning in this field.
4. Design innovative teaching sequences from contexts that provide recreational mathematics.
5. Identifying, designing and communicating concepts, facts and phenomena of different sciences capable of being modelled using mathematical concepts.
6. Understand and critically evaluate educational software and related web-based resources in the gaming world that are suitable for teaching and learning mathematics.
7. Analyse the goals of mathematics education at different stages of primary education.
8. Design teaching and learning sequences that connect different mathematical topics.
9. Identify the social, economic and environmental implications of academic and professional activities within one's own area of knowledge.
10. Analyse the indicators of sustainability of academic and professional activities in the areas of knowledge, integrating social, economic and environmental dimensions.
11. Propose viable projects and actions to boost social, economic and environmental benefits.
12. Propose ways to evaluate projects and actions for improving sustainability.

Contents

1. Introduction:

1.1. Playful mathematics and "serious" mathematics.

1.2. Mathematical activity, games and mathematical recreations throughout history.

1.3. The application of games to decision-making: competitive games and collaborative games. The dilemmas

2. Board games and problem solving

2.1. Strategy games (Games of alignments, Search games, Games of connections, Games of Mancala)

2.2. The determination of winning strategies: The small strategy games (Nim and Nimbus games)

2.3. Other board games (games on paper and various pawn games).

3. Games with random intervention

3.1. Systems to generate situations of chance

3.2. Traditional games and probability

4. Mathematical recreations, a resource for the classroom: Enigmas and recreational problems

4.1. Numerical, geometric and logical recreations

5. Learning mathematics and recreational activities

5.1. Examples of mathematical and recreational activities in the school

Learning activities and methodology

Title	Hours	ECTS	Learning outcomes
Autonomous	75	3	
Directed	45	1.8	
Tutorials and follow-up	23	0.92	

The teaching and learning methods of this subject are based on interactive dynamics of whole-group and small-group face-to-face participation.

The main tenets are as follows

- 25 hours for presentations of the teacher (whole-group)
- 10 hours for analyses of board games (small-group)
- 10 hours for mathematical recreation workshops (small-group)
- 5 hours for student presentations and other assessment tasks (whole-group)

Annotation: within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continuous assessment activities

Title	Weight	Hours	ECTS	Learning outcomes
Practice of analysis (parella)	10%	1	0.04	2, 3, 6
Practice of design (in pairs)	15%	1	0.04	1, 3, 7, 10
Didactic design of games (group)	20%	2	0.08	1, 2, 3, 4, 7, 8, 12
Classroom participation (Individual)	10%	1	0.04	2, 3, 5, 7, 9, 11
Final written test (Individual)	45%	2	0.08	2, 3, 5

CONTINUED ASSESSMENT

The students must participate in all lessons in order to have their activities assessed (up to 20% of incidences is contemplated). Moreover, the ordinary evaluation call will not be accomplished for students who have not submitted all the assessment activities within the corresponding deadlines and whose qualification is minimum 5 for each of these activities, including the written test. For these cases, there will be an extraordinary evaluation call where the maximum qualification will be 5. The dates of submission or accomplishment of the assessment activities are as follows:

- Analysis assignment: 28th September, 2026.
- Design assignment: 2th November, 2026.
- Mathematics classroom activity design project and oral presentation: 14th December, 2026.
- Final written exam: 11th January, 2027.

Activities of continued assessment	Qualification %
Classroom participation (individual)	10
Practice of analysis (pair)	10
Practice of design (pair)	15
Final written test (individual)	45
Design of classroom activities and presentation (small group)	20

The resit examination will take place on January 25, 2027. Students who obtain an average grade below 3.5 in the course will not be eligible to take the written resit examination.

No comprehensive final assessment (synthesis test) is offered.

SINGLE ASSESSMENT

Students following the single-assessment route must complete three assignments (an analysis project, a design project, and a project on designing mathematics classroom activities), each worth 20% of the final grade, in addition to the same final written examination taken by students under continuous assessment, which is worth 40% of the overall grade. All assessment activities will take place on January 11, 2027.

Students must obtain a minimum grade of 5 in each assessment component (including the written examination) in order to be eligible for overall evaluation. The same resit system as for continuous assessment will apply, with the resit examination taking place on January 25, 2027.

In addition:

- Communicative competence will be taken into account in all assessment activities. Any assignment may be returned for revision if it contains deficiencies in written expression or spelling.
- The grade awarded for group work is not necessarily the same as the individual grade received by each member of the group.
- Copying or plagiarism in any assessment activity will result in a grade of zero for the course. The use of generative artificial intelligence tools to substitute for students' own learning activities will also result in a grade of zero for the course.
- Grades for each assessment activity will be provided to students within 15 working days. Once grades have been released, students may review their marks during the office hours arranged by the instructor.

Bibliography

Recommendations of some texts

Albarracín, L. (2021). Una secuencia de actividades para desarrollar la visualización usando un videojuego. *Enseñanza de las Ciencias*, 39(2), 181-199.

Comas, O. (2005). *El món en jocs*. RBA-La Magrana.

Deulofeu, J. (2003). *131 juegos matemáticos*. Martínez Roca.

Fomín, D. et al. (2012). *Círculos matemáticos*. SM & RSME.

Gardner, M. et al. (2018). *¡Ajá! Paradojas que te hacen pensar*. RBA.

Grinfeld, F. (1978). *Juegos de todo el mundo*. UNICEF-Edilan.

Guzmán, M. (2003). *Cuentos con cuentas*. Nívola.

Paenza, A. (2017). Gardner para aficionados. Juegos de matemática recreativa. SM & RSME.

Wells, D. (1992). *The penguin book of curious and interesting puzzles*. Penguin Books

Recommendations of some webpages

Jareño, Joan. Calaix +ie. <http://xtec.cat/~jjareno>

NRICH Enriching Mathematics. <http://nrich.maths.org/frontpage>

CREAMAT. <http://srvcnpbs.xtec.cat/creamat/joomla>

DIVULGAMAT. <http://www.divulgamat.net>

Software

No specific software will be used. However, there can be, in accordance with the types of game-based learning activities, related open access software.

Course groups and languages

The information provided is provisional until November 30. After this date, you will be able to consult the language of each group through this [link](#). To access the information, you will need to enter the course CODE

Type of teaching	Group	Language	Semester	Shift
(TE) Theory	20	Catalan	first semester	morning-mixed