UNIVERSIDAD NACIONAL AUTÓNOMA DE MÉXICO
PROGRAMA DE POSGRADO EN
FILOSOFÍA DE LA CIENCIA

Actividad Académica: STS FMLC Introducción a la Lógica Paraconsistente					
Clave:	**Semestre:** 3	**Campo de conocimiento:** FMLC			
Carácter: Obligatoria ( ) Optativa ( ) de Elección ( )		**Horas por semana**		**Horas al semestre**	**No. Créditos:**
Tipo:		**Teóricas:** 4	**Prácticas:**	64	8
Modalidad: Presencial		**Duración del programa:** 1 semestre			

Seriación: **Si ( )** **No (X)** **Obligatoria (X)** **Indicativa ( )**

Introducción: Classical logic does not tolerate contradictions —deriving a single inconsistency from a given classical theory allows for anything else to be thereby derived. Paraconsistent logics are more resistant to such contamination —whether a contradiction arises in the scope of a discourse or a discussion, or happens to follow from the information contained in a database, it is often worth identifying it, isolating it, or somehow controlling its potentially harmful effects.

Objetivo general: This course will provide an introduction to paraconsistency, from an abstract, a semantical and a deductive viewpoints, with an emphasis on recent (15 years or less) developments.

Contenido Temático			
Unidad	**Temas**	**Horas**	
		Teóricas	**Prácticas**
1	What is a Paraconsistent Logic? 1.1 Inconsistent-tolerant logics are introduced and discussed. 1.2 Will we contradict ourselves?	4	0
2	Genuine Paraconsistency 2.1 Is the invalidity of Explosion enough for paraconsistency, or something else is required? 2.2 Can the Law of Non-Contradiction be valid in a paraconsistent logic?	4	0
3	What is Negation?	4	0

	3.1 The nature of negation. 3.2 Are we still talking about negation when considering a connective that fails the Principle of Explosion?		
4	Logics of Formal Inconsistency 4.1 Internalizing at the object language the metatheoretical notion of consistency. 4.2 How can we recover classical reasoning from within a non-classical environment?	4	0
5	Other recovery strategies 5.1 Other mechanisms for recovering classical reasoning from within a non-classical environment.	4	0
6	Interlude on duality: paraconsistency and paracompleteness 6.1 What are the relations between paraconsistent logics and constructive logics?	4	0
7	Multi-valued semantics – the deterministic case 7.1 What are the advantages and disadvantages of dealing with 3-valued and 4-valued non-classical negations?	4	0
8	Multi-valued semantics – the non-deterministic case 8.1 Beyond truth-functionality. 8.2 What other kinds of finite-valued paraconsistent negations are there?	4	0
9	Worlds semantics 9.1 Negations with a modal character. 9.2 How best to understand negative modalities?	4	0
10	A proof theory for negative modalities 10.1 Sequent calculi for negation as negative possibility (and for negation as impossibility). 10.2 What are their main properties?	4	0
11	Paraconsistency, meta-paraconsistency and beyond	4	0

	11.1 Metaentailments: Transitivity and Monotonicity are examples of such meta-entailments. 11.2 What does paraconsistency look like in such a setting?		
12	Contradictory logics 12.1 Are there sensible cases of contradictory logics?	4	0
13	Inconsistent mathematics 13.1 A set belonging and not belonging to itself. 13.2 What other mathematical creatures could one find if Mathematics is done paraconsistently?	4	0
14	Inconsistent semantics 14.1 Can an argument be both valid and invalid?	4	0
15	Mini-seminar on paraconsistent logics	4	0
16	Mini-seminar on paraconsistent logics	4	0
	Total de horas:	64	0
	Suma total de horas:	64	

Bibliografía y actividades:

Nota: Although the course is intended to be taught in Spanish, it may include some sessions in English.

Medios didácticas:		**Métodos de evaluación:**	
Exposición profesor(a)	(X)	Exámenes o trabajos parciales	(X)
Exposición alumnos	(X)	Examen o trabajo final escrito	( )
Ejercicios dentro de clase	(X)	Trabajos y tareas fuera del aula	(X)
Ejercicios fuera del aula	(X)	Exposición de alumnos	( )
Lecturas obligatorias	(X)	Participación en clase	(X)
Trabajo de investigación	(X)	Asistencia	(X)
Prácticas de campo	( )	Prácticas	( )
Otros: _____	( )	Otros: _____	( )

Evaluación y forma de trabajo
Aattendance (10%), participation in classes and mini-seminars (40%), periodic written assignments (50%). Handout and slides will be self-contained, but additional reading material will be offered to the students according to their specific interests.

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Día y hora del curso o seminario:
Viernes de 10:00 a 14:00

Bibliografía mínima (puede cambiar)

Carolina Blasio, Carlos Caleiro y João Marcos. What is a logical theory? On theories containing assertions and denials. *Synthese*, 198:5481–5504, 2021.

Guillermo Badia y João Marcos. On classes of structures axiomatizable by universal d-Horn sentences and universal positive disjunctions. *Algebra Universalis*, 79(41), 2018.

Carolina Blasio, João Marcos y Heinrich Wansing. An inferentially many-valued two-dimensional notion of entailment. *Bulletin of the Section of Logic*, 46(3/4):233–262, 2017.

Alexander Bochman. Biconsequence relations: A four-valued formalism of reasoning with inconsistency and incompleteness. *Notre Dame Journal of Formal Logic*, 39(1):47–73, 1998.

Carlos Caleiro, Sérgio Marcelino y João Marcos. Merging fragments of classical logic. In *Frontiers of Combining Systems: 11th International Symposium, FroCoS 2017, Proceedings*, volume 10483 of *LNCS*, Springer, pages 298–315, 2017.

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Vitor Greati y João Marcos. Finite Two-Dimensional Proof Systems for Non-finitely Axiomatizable Logics. In: *Automated Reasoning: IJCAR 2022, Proceedings*, volume 13385 of *LNCS*, pages 640–658. Springer, 2022.

Vitor Greati, Sérgio Marcelino y João Marcos. Proof search on bilateralist judgments over non-deterministic semantics. In *30th International Conference on Automated Reasoning with Analytic Tableaux and Related Methods (TABLEAUX 2021), Proceedings*, volume 12842 of *LNCS*, pages 129–146. Springer, 2021.

Lloyd Humberstone. Heterogeneous logic. *Erkenntnis*, 29(3):395–435, 1988.

Ian Rumfitt. 'Yes and No'. *Mind*, 109(436):781–823, 2000.

D. J. Shoesmith y Timothy John Smiley. *Multiple-Conclusion Logic*. CUP, 1978.

Yaroslav Shramko y Heinrich Wansing. *Truth and Falsehood: An inquiry into generalized logical values*. Springer, 2011.

Ryszard Wójcicki. *Theory of Logical Calculi*. Kluwer, Dordrecht, 1988.