Private University of Tacna (UPT)
School of Architecture
Syllabus 2027-I

1. COURSE

AR2B1. Multidisciplinary Coordination (Mandatory)

2. GENERAL INFORMATION

2.1 Course	:	AR2B1. Multidisciplinary Coordination
2.2 Semester	:	3rd Semester.
2.3 Credits	:	4
2.4 Hours	:	4 HT; 4 HP;
2.5 Duration of the period	:	16 weeks
2.6 Type of course	:	Mandatory
2.7 Learning modality	:	Face to face
2.8 Prerrequisites	:	AR1B2. Parametric Modeling and Generative Design. (2nd Sem)

3. PROFESSORS

Meetings after coordination with the professor

4. INTRODUCTION TO THE COURSE

Multidisciplinary Coordination is the third course of the ten-course BIM I-X sequence, building directly on the parametric modeling and generative design skills developed in Parametric Modeling and Generative Design (AR1B2). It shifts the sequence's focus from single-author model authoring to the federated, multidisciplinary practice that defines real BIM projects: assembling and coordinating models from multiple disciplines, resolving clashes through a Common Data Environment, collaborating in real time on cloud-based platforms, and tracking design and construction issues through model-linked BCF and RFI workflows. This course precedes BIM Execution Planning (AR2B2), which formalizes these practices into standards and delivery-method requirements.

5. GOALS

- Coordinate federated, multidisciplinary BIM models to detect and resolve design conflicts before construction, applying a shared Common Data Environment protocol.
- Collaborate on a shared BIM model in real time across disciplines, using cloud-based BIM platforms and agreed model-sharing and worksharing conventions.
- Track and resolve design and construction issues through model-linked workflows, including BCF-based issue tracking, model-based RFIs, and submittal tracking.
- Build hands-on proficiency in the coordination and collaboration software tools covered in the course through guided, cumulative practicum exercises aligned with industry certification.

6. COMPETENCES

AG-A03) Performs effectively as an individual and as a member or leader in diverse, inclusive teams, in multidisciplinary in-person and remote environments. (Usage)

AG-A04) Communicates effectively and inclusively with the architecture community and society through reports, design documentation, and presentations tailored to different audiences. (Usage)

AG-A06) Recognizes the need to learn independently and continuously, adapt to new and emerging technologies, and apply critical thinking in the face of technological change. (Usage)

7. TOPICS

Unit 1: Multidisciplinary Model Coordination (24 hours)	
Competences Expected: AG-A03	
Topics	**Learning Outcomes**
• BIM coordination and clash detection: federated model assembly, hard and soft clash detection in Navisworks or Solibri, clash resolution workflows, and the reduction of RFIs • IFC and open BIM standards: the IFC schema for vendor-neutral model exchange, BCF (BIM Collaboration Format) for issue tracking, and openBIM coordination workflows across authoring platforms • Common Data Environment (CDE): shared, work-in-progress, published, and archive states for model and document management; naming conventions and version control in a multi-party project	• Describe the role of model coordination in a multidisciplinary project, including federated models, clash detection, and the Common Data Environment [Familiarity] • Apply BIM coordination tools to detect and resolve clashes in a federated building model, documenting issues through a Common Data Environment workflow [Usage] • Evaluate a model-coordination protocol for a construction project, assessing federation strategy, clash-detection coverage, and CDE governance [Assessment]
Readings : [Sac+18]	

Unit 2: Collaborative BIM Workflows (24 hours)	
Competences Expected: AG-A03	
Topics	**Learning Outcomes**
• BIM collaboration: federated models, clash detection and resolution, model-based quantity takeoff for estimating • Cloud-based BIM collaboration platforms: real-time multi-user editing (BIM 360/ACC, BIMcloud, Trimble Connect), permissions, and worksharing	• Describe how cloud-based BIM collaboration platforms support real-time, multi-user, multidisciplinary model development [Familiarity] • Develop a BIM collaboration protocol for a project, specifying model sharing standards, clash detection frequency, and meeting rhythms [Usage] • Evaluate a project's BIM collaboration setup for its effectiveness in supporting multidisciplinary, real-time teamwork [Assessment]
Readings : [HM15]	

Unit 3: Model-Based Issue and RFI Management (24 hours)	
Competences Expected: AG-A04	
Topics	**Learning Outcomes**
• BCF (BIM Collaboration Format)-based issue tracking: creating, assigning, and closing model-linked issues across authoring platforms • Model-based requests for information (RFIs): linking an RFI to specific model elements and views, and tracking its resolution back into the model • Submittal tracking tied to model elements: linking product data and shop-drawing submittals to the BIM elements they specify	• Describe how BCF-based issue tracking, model-based RFIs, and submittal tracking keep design and construction issues linked to specific model elements [Familiarity] • Create, assign, and track a set of model-linked issues through BCF, and link a submittal or RFI to the model elements it affects [Usage] • Evaluate a project's model-based issue log for traceability, timely resolution, and completeness of the links between issues and model elements [Assessment]
Readings : [HM15]	

Unit 4: BIM Software Practicum (24 hours)	
Competences Expected: AG-A06	
Topics	**Learning Outcomes**
• Guided, graded software exercises in the BIM tool(s) specific to the course's theme (authoring, coordination, scheduling, analysis, or FM platforms), building toward a cumulative course deliverable • Practice aligned with vendor or industry certification exams (Autodesk Certified Professional, buildingSMART openBIM) relevant to the course's software focus	• Describe the practicum structure for the course's BIM software focus and the deliverable it builds toward [Familiarity] • Complete a sequence of guided exercises in the course's BIM software focus, building toward a cumulative practicum deliverable [Usage] • Evaluate the student's own practicum deliverable against the software proficiency expected for the course's BIM theme [Assessment]
Readings : [HM15]	

8. WORKPLAN

8.1 Methodology

Individual and team participation is encouraged to present their ideas, motivating them with additional points in the different stages of the course evaluation.

8.2 Theory Sessions

The theory sessions are held in master classes with activities including active learning and roleplay to allow students to internalize the concepts.

8.3 Practical Sessions

The practical sessions are held in class where a series of exercises and/or practical concepts are developed through problem solving, problem solving, specific exercises and/or in application contexts.

9. EVALUATION SYSTEM

********* EVALUATION MISSING ********

10. BASIC BIBLIOGRAPHY

[HM15] Brad Hardin and Dave McCool. *BIM and Construction Management: Proven Tools, Methods, and Workflows*. 2nd. Wiley, 2015.

[Sac+18] Rafael Sacks et al. *BIM Handbook: A Guide to Building Information Modeling for Owners, Designers, Engineers, Contractors, and Facility Managers*. 3rd. Wiley, 2018.