1. Link between computability and Connes embedding'.

For the first 2-3 lectures you could imagine (1) stating Tsirelson's problem, (2) arguing why QWEP implies Tsirelson, and (3) arguing why the validity of Tsirelson's problem implies computability of the "game value", which is the problem of maximizing a linear functional over the set Q_\otimes defined in the first paper referenced below. None of this is our work, but it would put everyone on the same page in terms of (i) defining a computational (optimization) problem and (ii) being convinced that undecidability of that problem implies a refutation of CEP. (If you want to use our paper as a guide, the connection is discussed in the introduction, Section 1.3.)

- Tobias Fritz's paper: https://arxiv.org/pdf/1008.1168.pdf gives a proof that the validity of Kirchberg's QWEP conjecture implies a positive answer to Tsirelson's problem. The most relevant part is Section 4, which is pretty straightforward for operator algebraists. For the relation between the QWEP conjecture and CEP we have to refer to Ozawa's paper https://arxiv.org/abs/1212.1700. It is not really necessary to read the latter.
- The connection to computability is made in this paper https://arxiv.org/abs/1207.0975, see in particular the discussion at the start of Section 4. This connection is very simple and should take at most one session to explain. The main idea is to build on a "NC positivstellensatz". One way to approach this is to read this paper https://arxiv.org/pdf/0803.4373.pdf. Another standard reference is this one https://arxiv.org/pdf/0903.4368.pdf, but it is more for physicists and less rigorous. Alternatively, the paper by Fritz et al. above might be enough; they give a direct proof (see Lemma 2.1) and refer to a Positivstellensatz by Schmudgen.

2. Self-testing and nonlocal games

The second step is to build some understanding of the area of "self-testing" in quantum foundations/quantum cryptography. In our paper, this corresponds to getting an understanding of the definitions in Section 5 (excluding Section 5.4), as a first step, and then Section 7, as a much more involved second step.
On this topic there are some very good lecture notes by Richard Cleve, that you could follow. Here is a possible way to break this down into a couple sessions: (The reference to sections in the notes is approximate, because I am not sure which sections depend on which. You could get our help to find the shortest path.)

- Introduction, notion of a nonlocal games, example: CHSH and Magic Square. This is Sections 1-4.
- Structure of optimal strategies: Sections 7-8
- Robustness and structure of near optimal-strategies: Sections 10-11
- You could add a fourth session on the "Pauli braiding test", which starts putting things together and makes a connection to approximate representations of finite groups. For this, the blog post http://users.cms.caltech.edu/~vidick/notes/pauli_braiding_1.pdf provides an introduction and references.

3. The PCP theorem

The third step is independent from the first two. This step is a huge mouthful, so you could aim to take it as a black box. For the statement that is most crucial to the paper, and a self-contained proof of it, we have some personal notes. For a more general introduction we recommend the notes by Harsha. You could pack this into a single session, or maybe two if you want to see the proof in more detail.

4. The quantum low-degree test

This step puts the previous two steps together.

5. Recursive compression

At this point you have almost all the basic technical ingredients in place. It could be a good time to “zoom out” and focus on Section 12 in our paper. You can take Theorem 12.2 as a black-box, and maybe find it believable based on the previous discussions. Then, go through the section to get the final result. This could be done in one session.

6. Proving Theorem 12.2

This is the bulk of our paper, but by now you have all the ingredients in place. The key section is Section 8, that relies on the notions in Section 4. That could take 2-3 sessions. Then, 9 and 11 would each take one session (or can be taken on faith). Section 10 is another big mouthful. How much you can go in detail on that will depend on how much understanding of the PCP theorem you built.