EAGLE EYE
STRUCTURAL ENGINEERING PLATFORM

ACADEMIC PROGRAM · INFORMATION PACKAGE

Teaching with Eagle Eye

Course support for faculty members teaching structural engineering

> Eagle Eye supports existing structural engineering courses with interactive apps, examples and teaching material that can be used in class and by students for self-study.

In this package

The program and what it provides · How a course starts · Access, at no cost to faculty or students · The four supported course packages and the apps behind them

1 The program

Most faculty members already have well-established course material and teaching methods. Eagle Eye is not intended to replace these. It provides additional tools for topics that are easier to explain through interactive visualization and simulation, such as stress distributions, deformation and failure modes.

Eagle Eye is a set of structural engineering apps that run in the browser, with nothing to install, supported by a Learning Hub of videos, animations, worked examples and verification documents, and by a professional community where questions are asked and answered. The platform is developed by CSI Bangkok, with workflows that connect to ETABS® and SAP2000® models.

Teaching with Eagle Eye is a teaching support program offered by the Eagle Eye team. The resources are prepared by faculty members, researchers and students working with the Eagle Eye team, and are based on material used in actual structural engineering courses. They are intended to fit alongside the existing syllabus, teaching approach and assessments rather than replace them.

A class session with Eagle Eye. After the elastic flexural stress formula has been derived in a lecture, a cross-section can be drawn in the app, shown on the classroom projector. For a given bending moment, the stress distribution appears immediately as colored contours alongside the numbers. If a section dimension is changed, the effect on the stress distribution can be shown immediately. During self-study, students open the same app on their own devices, repeat what was shown, and check their hand solutions against it. The course content and the assessments remain the same; the equations and the corresponding structural behavior can be viewed together.

A course package

For each supported course: slide decks on the theory, animations of key concepts, validation examples comparing manual solutions with app results, solved examples, and step-by-step walkthroughs.

The Learning Hub

Videos, animations, guides, documentation and verification materials for every app, open to faculty and students during the term and after it.

`eaglei.tech/learning`

A private course group

A dedicated space on the Eagle Eye Community for each class. Access is limited to the registered class, the faculty member and the assigned Eagle Eye teaching assistant.

`community.eaglei.tech`

Support throughout. Each participating faculty member is assigned an assistant from the Eagle Eye team. Before the semester, the material and apps are reviewed together in an online session. The assistant also helps set up the course group, supports student registration, and remains available during the term.

2 How a course starts

1. The faculty member selects the course and the topics for which Eagle Eye support is required; the course outlines in this package show what is available.
2. The course is registered on the Eagle Eye platform and a dedicated assistant is assigned. The material and apps are reviewed together in a live online session.
3. A private group for the course is created on the Eagle Eye Community.
4. The faculty member provides the class list. Students register, preferably using their university email addresses, and receive access coupons.
5. The course proceeds as usual, with the apps available in class and for student use outside class. The assigned assistant remains available throughout the term.

3 Access

There is no charge to students or faculty members for the course support described in this package.

Faculty members	Pro-level access to the platform, free of charge, for one year at a time, renewable each year.
Students	Six months of Pro-level access to the GEAR apps and Column Designer, free of charge, through coupons issued against the class list.
After six months	Access reverts to the Basic level unless the student enrolls in another registered course; the apps remain usable at the Basic level, and the Learning Hub and the Community remain open.
Equipment	A laptop or lab computer with a browser; tablets also work. Nothing is installed, so the apps behave the same at the university and at home.
Future institutional features	Additional institutional features, such as assignment management and automated grading, are planned. If these are offered under a paid institutional subscription in future, there would be no charge to individual students or faculty members.

Will students still learn the manual methods?

Yes. The apps are intended to complement, not replace, manual methods. Validation examples show the same problem solved manually and, in the app, with the results compared side by side. Students continue to derive equations, solve problems by hand and complete the normal course assessments.

The course has a different title or syllabus at the university. Does that matter?

No. Course titles and syllabi vary between universities. At registration, the course is mapped to the relevant package and topics. A faculty member may use the full package or only selected parts of it.

4 The course packages

Four course packages are currently available. The same subjects may carry different course titles at different universities. The current concrete and steel design packages are based on ACI and AISC provisions. Detailed outlines, with learning objectives and topics, accompany this package or are available on request.

Strength of Materials

also taught as Mechanics of Materials, Mechanics of Solids I and II, Solid Mechanics

Many topics in Strength of Materials involve stresses and strains within the cross-section, which are difficult to visualize from equations alone. The apps allow stress distributions, principal directions and the effects of section geometry to be viewed and changed interactively.

TOPICS

Cross-section properties; Mohr's Circle and principal stresses; flexural and shear stress distributions; nonlinear material behavior; biaxial and unsymmetrical bending

EAGLE EYE APPS

RC Beam Elastic Stress · RC Beam Section · Steel Section · Column Designer

Structural Analysis

also taught as Theory of Structures I and II, Structural Analysis I and II, Structural Mechanics

Students can solve structures manually and then use the apps to check the same problems, examine alternative parameters and visualize the stiffness-method solution.

TOPICS

2D trusses by the classical methods against the matrix methods; the direct stiffness method for beams and frames; shear and moment diagrams and deflections of indeterminate structures

EAGLE EYE APPS

Beam Analysis · Frame 2D Analysis · Truss 2D Analysis · Import from ETABS / SAP2000 / Excel · RC Beam Deflection

Reinforced Concrete Design

also taught as Concrete Design, RC Design I and II, Design of Concrete Structures

The apps support code-based design checks while allowing students to examine how changes in section, material and reinforcement affect strength, deformation and failure behavior.

TOPICS

Moment-curvature behavior; ACI design of beams and columns; performance evaluation; columns under uniaxial and biaxial loading with slenderness; strengthening and retrofitting

EAGLE EYE APPS

Multiple RC Beams | RC Beam | RC Two-Way Slab | Isolated Footing | RC Beam Section | Moment-Curvature | RC Beam Performance | RC Beam Deflection

Steel Design

also taught as Design of Steel Structures, Steel Structures, Structural Steel Design

The apps can be used to carry out the code checks and to examine which limit state governs, how the governing condition changes, and how the design is affected by changes in section or loading. Manual calculations remain part of the course and can be used for verification.

TOPICS

Tension and compression members; steel beams and columns to the AISC method; analysis of a complete roof truss system

EAGLE EYE APPS

Multiple Steel Beams | Multiple Steel Columns | Steel Beam | Steel Column | Steel Strut | Steel Section | Truss 2D Analysis

Other courses. Other courses can also be supported where suitable Eagle Eye apps are available, including first-year engineering mechanics and selected graduate courses. Faculty members may contact learning@csibangkok.com to discuss a course.

5 Current classroom use

The Eagle Eye apps, the Learning Hub and the course groups are already in use this semester in a master's level Advanced Concrete Design course at the Asian Institute of Technology (AIT), and the program is currently supporting an undergraduate structural design course at Chulalongkorn University. The present course packages have been developed and refined through these classroom applications. The same academic and technical team provides support for participating courses.

6 Academic coordination

Dr. Naveed Anwar and team

The academic program is coordinated by Dr. Naveed Anwar with a team of faculty members, researchers and students. Dr. Anwar is a faculty member at the Asian Institute of Technology and CEO of CSI Bangkok. He has worked in structural engineering practice, teaching and software development for more than four decades. The program is based on material and software used in courses taught and supported by the team. drnaveedanwar.net

7 Getting started

Faculty members interested in using the program can begin with a short online meeting to review the course, identify the relevant topics and agree on the level of support required. The Eagle Eye team then handles the course setup.

education@eaglei.tech · eaglei.tech · eaglei.tech/learning · community.eaglei.tech

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