Functional Requirements for a Peer-to-Peer Collaborative Learning Application

1. **Socialization**
   - **Connecting with People of Similar Interests**
     - The system should allow users to search for and connect with other users who share similar academic and extracurricular interests.
     - The application should use an algorithm to suggest potential connections based on user profiles, including interests, skills, and learning goals.
     - Users should be able to send and accept connection requests, and also have the option to decline or block connections if needed.
     - People can also make posts in their profile so they can show off their skills
   - **Connecting with Seniors in Similar Fields**
     - The application should allow users to connect with senior students or mentors who are in the same field of study.
     - The system should facilitate mentoring relationships, enabling seniors to provide guidance, resources, and advice.
     - The application should notify users when a relevant senior or mentor becomes available.
   - **Learning Extracurriculars from Other Students**
     - The system should allow users to search for and join extracurricular learning sessions led by other students.
     - Users should be able to create, join, and manage groups dedicated to learning various extracurricular activities.
     - The system should provide tools for organizing and scheduling these sessions, including video conferencing and chat functionalities.
   - **Creating and Managing Peer Learning Groups**
     - The application should allow users to create peer learning groups for different topics or courses.
     - The system should support group discussions, resource sharing, and collaborative tasks within these groups.
     - The system should allow users to set group rules, assign roles (e.g., moderator, contributor) and manage membership.
2. **Grades Tracker**
   - **Tracking Academic Performance**
     - The application should include a feature that allows users to track their grades over time.
     - The system should provide trend analysis and visual representations (e.g., graphs) of academic performance.
     - Users should be able to set academic goals and receive reminders or alerts related to their grades

3. Calendar Hosting

- **Shared Group Calendar**
  - The application should provide a shared calendar feature that allows study groups to schedule and track group events, meetings, and deadlines.
  - The calendar should be integrated with the group's communication tools, enabling automatic updates and reminders.
  - The system should allow users to sync the group calendar with their personal calendars (e.g., Google Calendar, iCal).

4. Newsletters

- **Content Delivery**
  - The application should allow administrators or group leaders to send newsletters to users or specific groups.
  - Users should be able to subscribe to different types of newsletters based on their interests or group memberships.
  - The system should support the inclusion of multimedia content (e.g., images, videos) within newsletters.

5. Task Sheet

- **Personalized Task Management**
  - The application should provide each user with a personalized task sheet to manage their study-related tasks and deadlines.
  - The system should allow users to prioritize tasks, set reminders, and track their progress.
  - The task sheet should be integrated with other features such as the grades tracker and group calendar for holistic management of academic responsibilities.
  - Can we add a task sheet should be capable of analyzing why a certain set of tasks were unable to be completed

6. Algorithmic Study Group Sorting

- **Automated Group Formation**
  - The application should include an algorithm to sort users into study groups based on their academic interests, learning goals, and compatibility with other users.
  - The algorithm should consider factors such as users' schedules, preferred learning styles, and past academic performance to create balanced and effective study groups.
  - The system should allow for manual adjustments to group assignments by administrators or group leaders(do we really need a group leader?) if necessary.

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Additional Features:

- **User Profiles**
  - Users should be able to create and manage profiles that highlight their academic and extracurricular interests, skills, and learning goals
  - The profiles should be used by the algorithm to suggest connections, study groups, and extracurricular learning opportunities.
- **Communication Tools**
  - The application should provide integrated communication tools, including chat, forums, and video conferencing, to facilitate interaction within and between study groups.
- **Resource Sharing**
  - Users should be able to share resources such as notes, study materials, and multimedia content within their study groups and peer networks.
  - The system should support various file formats and provide organization tools (e.g., folders, tags) for shared resources.

Algorithm for Finding Like-Minded People

- **Profile Matching**
  - The algorithm should analyze user profiles to find similarities in academic interests, learning goals, and extracurricular activities.
  - It should assign a compatibility score to each potential connection based on the overlap in these areas.
  - The system should suggest connections with high compatibility scores and allow users to view the basis of these suggestions.
- **Behavioral Analysis**
  - The algorithm should monitor user behavior, such as participation in study groups, task completion, and content interactions, to refine its recommendations over time.
  - It should adapt to changing user interests and goals, ensuring that suggestions remain relevant.
- **Feedback Incorporation**
  - Users should be able to provide feedback on suggested connections and study groups, which the algorithm should incorporate to improve future recommendations.

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